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UNITED STATES PATENT AND TRADEMARK OFFICE

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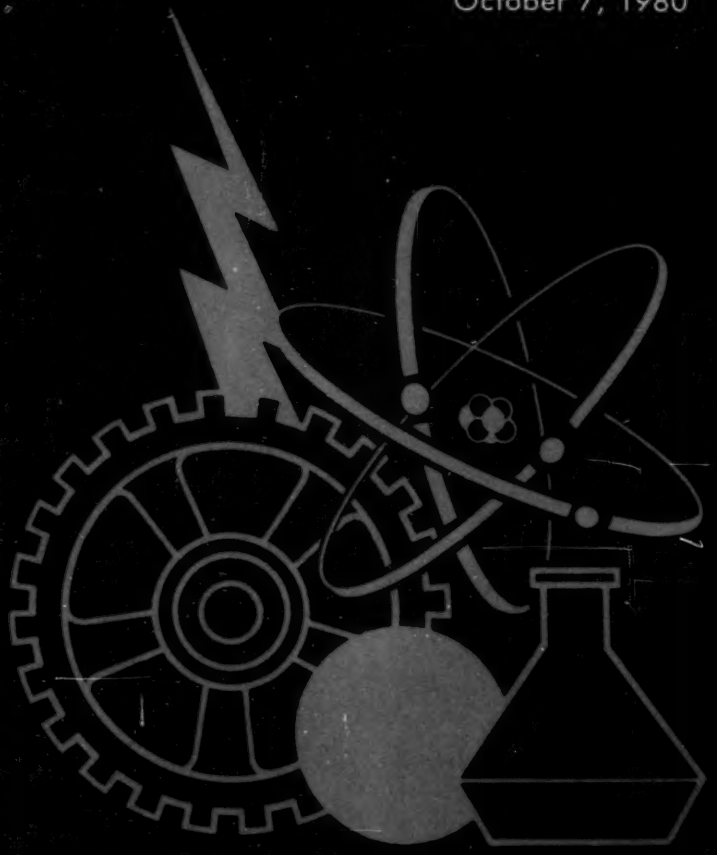
October 7, 1980



U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

October 7, 1980 Volume 999 Number 1

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PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS AND DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

June 17, 1980.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Department of Commerce

PATENT AND TRADEMARK OFFICE

Designation of International Depository Authorities under the Budapest Treaty

The Budapest Treaty an the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure came into force on Aug. 19, 1980 with respect to the United States, Bulgaria, France, Hungary and Japan. A copy of the Treaty was published in the OFFICIAL GAZETTE on Aug. 23, 1977 (961 O.G. 21–26).

This Treaty authorizes each State for which the Treaty is in effect to designate a depository on its territory to serve as an international depository authority. More than one depository may be designated. Each such depository will be authorized to receive and store deposits, and dispense samples thereof, in compliance with the Treaty and the patent laws of each State adhering thereto. The Treaty is open for adherence by any member State of the Paris Union for the Protection of Industrial Property.

The Commissioner of Patents and Trademarks hereby solicits requests from private and public depositories located in the United States to serve as international depository authorities. Requests should be addressed to: Sidney A. Diamond, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Each request must explain and, to the extent practicable, provide evidence of the depository's capacity to meet the obligations of the Treaty. Such request must also include an offer by the depository to assume the cost of transferring deposits made under the Treaty to another international depository authority in the event of default of any of its Treaty obligations. The availability of funds for such transfer, if needed, must be available through a bond, special reserve fund, escrow or other means judged suitable by the Commissioner.

Requests will be promptly evaluated by the Commissioner of Patents and Trademarks, and each requesting depository promptly notified of the decision reached. Questions or inquiries concerning this notice may be addressed to the Office of Legislation and International Affairs, at the following address: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The telephone number of the Office of Legislation and International Affairs is (703) 557–3065.

The World Intellectual Property Organization, in Geneva, Switzerland, the Secretariat for the Paris Union, has provided a memorandum explaining the role and obligations of international depository authorities. This memorandum is reproduced below for the guidance of depositories in requesting recognition as an international depository authority.

MEMORANDUM

For the purposes of prospective international depositary authorities under the Budapest Treaty

Introduction

1. This memorandum contains information for the benefit of any depositary institutions (culture collections) that may wish to become "international depositary authorities" under the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure (done at Budapest on Apr. 28, 1977). Its brevity is such that it cannot be exhaustive. Any interested person requiring full information should refer to the relevant provisions of the Budapest Treaty and the Regulations under it (any reference hereinafter to an "Article" or to a "Rule" is a reference to an Article of the Budapest Treaty or to a Rule of the Regulations under it).

Objectives of the Budapest Treaty

2. Disclosure of the invention is a generally recognized requirement for the grant of patents (for the purposes of this memorandum, the word "patent" also covers other titles of protection, such as inventors' certificates). Normally, an invention is disclosed by means of a written description. Where an invention involves the use of a microorganism that is not available to the public, such a description is not sufficient for disclosure, since the invention could not be used by a person skilled in the art. That is why in the patent procedure of an increasing number of countries it is necessary not only to file a written description but also to deposit, with a depositary institution, a sample of the microorganism. When protection for the invention is sought in several countries, the complex and costly procedures of the deposit of the microorganism might have to be repeated in each of those countries. The objective of the Budapest Treaty is precisely to obviate such multiple deposits: under the Treaty a single deposit with one "international depositary authority" is sufficient for the purposes of patent procedure before the industrial property offices of all Contracting States, and of inter-governmental organizations granting regional patents which have declared that they recognize the effects of the Treaty (Articles 3(1)(a) and 9(1)(a)).

General Remarks on International Depositary Authorities

3. "International depositary authorities" are depositary institutions that have acquired the status of international depositary authorities. To obtain this status, a depositary institution has to be located on the territory of a Contracting State or of a member State of one of the organizations referred to in the preceding paragraph, and has to benefit from "assurances" furnished by that Contracting State or organization to the effect that the institution complies and will continue to comply with the requirements referred to in paragraph 5 below (Article 6(1)). The action for acquiring this status is taken by the State or organization concerned (Article 7 and Rule 3). There is nothing to prevent it from making more than one depositary institution acquire such status: it is therefore possible for there to be several international depositary authorities located on the territory of one and the same State.

4. An international depositary authority can lose its status either entirely (in which case "termination of status" is spoken of) or partly, in other words in respect of certain types of microorganisms only (in which case "limitation of status" is spoken of). Loss of the status occurs if the State or organization whose action brought about the acquisition of the status denounces the Treaty or withdraws the declaration of recognition of the effects of the Treaty (in which case the loss of status can only be total), or if the State or organization withdraws its assurances regarding the international depositary authority, or again by virtue of a

decision of the Assembly of Contracting States taken at the request of another Contracting State or another organization (Articles 8, 9(4) and 17(4); Rule 4).

Requirements Which Have to be Met by International Depositary Authorities

5. The requirements referred to in paragraph 3 above which a depositary institution has to meet in order to become a depositary authority are the following (Article 6(2) and Rule 2):

(a) The institution has to have a continuous existence. It has to be impartial and objective—which means among other things that it has to be free of any dependence on interests that are liable to prejudice the disinterested performance of its functions—and it has to be available, for the deposit of microorganisms, to any depositor under the same conditions. These requirements, which in fact seem self-evident, are designed to give the public in general and depositors in particular fundamental guarantees of reliability as to the smooth operation of the system. On the other hand, the legal status of the institution is irrelevant: it may be either public or private.

(b) The institution has to have the necessary staff and facilities to perform its scientific and administrative tasks, which consist among other things in:

(i) accepting for deposit any or certain kinds of microorganisms;

(ii) examining the viability of the microorganisms deposited with it and issuing a receipt to the depositor and any required viability statement (see paragraphs 7 and 8 below);

(iii) storing the deposited microorganism for at least 30 years (Rule 9(1)) in such a way as to keep them viable and uncontaminated;

(iv) providing for sufficient safety measures to minimize the risk of losing the deposited microorganisms;

(v) complying, with respect to the microorganisms deposited under the Treaty, with the requirement of secrecy, which means giving no information to anyone on the question whether a microorganism has been thus deposited and giving no information to anyone (except to a person who is entitled to a sample—see paragraph 10 below) on any microorganism thus deposited (Rule 9(2));

(vi) furnishing, rapidly and in an appropriate manner, samples of the deposited microorganisms to all those who are entitled to such samples (see paragraph 10 below).

Handling of Microorganism Deposits by the International Depositary Authority

6. *Reception of the microorganism.* The international depositary authority may require that the microorganism be deposited in an appropriate form and quantity, and that it be accompanied by a form established by that authority. In such a case, the said authority has to communicate its requirements (and any amendments to them) to the International Bureau in order that the latter may communicate them to all the depositors concerned (Rules 6.3 and 13.2(b)(v)). When it receives the microorganism, the international depository authority notes the date of receipt of the deposit and gives it an accession number (Rule 7.3(iii) and (v)). It issues a receipt to the depositor attesting the receipt and acceptance of the deposit (Rule 7). The model of the international form for the receipt, the use of which will be mandatory, will be established by the Director General of WIPO and communicated to all international depositary authorities.

7. *Viability test.* The international depositary authority promptly tests the viability of the microorganism; it also undertakes viability tests at reasonable intervals, depending on the kind of microorganism and its possible storage conditions, or at any time, if necessary for technical reasons or at the request of the depositor (Rule 10.1).

8. *Viability statement.* The international depositary authority issues a statement concerning the viability of the microorganism to the depositor or to any person receiving a sample of the microorganism (see paragraph 10 below) (Rule 10.2). The model of the international form for the viability statement, the use of which is mandatory, will be established by the Director General of WIPO and communicated to all international depositary authorities.

9. *Storage of the microorganism.* The international depositary authority stores the microorganism for a period of at least 30 years after the date of its deposit, or until five years have elapsed without its having received a request for a sample, the period expiring later being applicable (Rule 9.1). It complies with the requirement of secrecy at all times (see paragraph 5(v) above). Where it cannot furnish samples of the deposited microorganism for any reason, it notifies the depositor of the fact, indicating the reason and informing him that he is entitled to make a new deposit (Article 4).

10. *Furnishing of samples.* The Regulations contain detailed provisions specifying who is entitled to receive samples of the microorganism, and when (Rule 11). The depositor himself is entitled to receive a sample at any time. He may authorize third parties to have samples furnished to them, whereupon the third parties receive a sample on presentation of their authorizations. Any industrial property office to which the Treaty applies may receive a sample on request if it needs the microorganism for the purposes of a patent procedure. Any other person may obtain a sample on request if an industrial property office to which the Treaty applies certifies that, under the applicable law, that person has a right to a sample of the microorganism concerned; the Regulations specify in detail the certification procedure. The use of a form (whose contents will be established by the Assembly and communicated by the International Bureau to all international depositary authorities) is mandatory for the request and certification. There is an alternative procedure wherey the industrial property office from time to time communicates to international depositary authorities lists of the accession numbers given to the deposit of the microorganisms referred to in the patents granted and published by it; the effect of this communication is to authorize those authorities to furnish samples of the microorganisms to anyone. It should be stressed that it follows from the foregoing that the international depositary never has to decide itself whether it has the right to furnish a sample since it only does so if it has the authorization of the depositor or of an industrial property office. The international depositary authority furnishes the sample in a container marked with the accession number given to the deposit and accompanied by a copy of the receipt for the deposit. It notifies the depositor of the furnishing of the sample.

11. *Communication of the scientific description and/or proposed taxonomic designation.* If the depositor has indicated a scientific description and/or proposed a taxonomic designation of the deposited microorganism, the international depositary authority must communicate it, on request, to any person entitled to receive a sample of the said microorganism (Rule 7.6).

12. *Fees.* For the procedure under the Treaty and the Regulations, the international depositary authority has the right to charge a fee in certain cases (specified in Rule 12.1). The two main fees are the fee for the storage of the microorganism (which is a single fee for the entire period of storage) and the fee for the furnishing of a sample (the furnishing of samples to industrial property offices is free of charge, however). The international depositary authority fixes the amounts of fees at its discretion, but they must not vary on account of the nationality or residence of the persons who have to pay them.

July 14, 1978.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Department of the Treasury
United States Customs Service

(TMK-2-RRUEE)

NOTICE OF APPLICATION FOR RECORDATION OF TRADE NAME

DONNKENNY, INC.

Application has been filed pursuant to section 133.12, Customs Regulations (19 CFR 13.12), for the recordation under

section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name DONNKENNY, INC., used by Donnkenny, Inc., a corporation organized under the laws of the State of Delaware, located at 1411 Broadway, New York, N.Y. 10018.

The application states that the trade name is associated with women's wearing apparel and sportswear including but not limited to sweaters, skirts, tops, jackets, shirts, jeans, and slacks. The application states further that no foreign firm is authorized to use the trade name sought to be recorded. Appropriate accompanying papers were submitted with the application.

Before final action is taken on the application, consideration will be given to any relevant data, views, or arguments submitted in writing by any person in opposition to the recordation of this trade name. Any such submission should be addressed to the Commissioner of Customs, Washington, D.C. 20229, in time to be received not later than 30 days from the date of publication of this notice in the FEDERAL REGISTER.

Notice of the action taken on the application for recordation of the trade name will be published in the FEDERAL REGISTER.

SALVATORE E. CARAMAGNO,
Dated: Aug. 8, 1980. *Acting Director, Office of Regulations and Rulings.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,107,587, Re. S.N. 171,799, Filed Jul. 24, 1980, Cl. 318/439, THREE-PHASE DC MOTOR HAVING NON-SUPERIMPOSED ARMATURE COILS, Itsuki Ban and Manabu Shiraki, Owner of Record: *Inventors,* Attorney or Agent: Joseph M. Lane, et al., Ex. Gp.: 217

4,175,057, Re. S.N. 162,730, Filed Jun. 25, 1980, Cl. 252/455 Z, ZEOLITE COMPOSITION, Evan E. Davies, et al., Owner of Record: *British Petroleum Company Limited, London, England,* Attorney or Agent: Lorimer P. Brooks, et al., Ex. Gp.: 116

4,180,689, Re. S.N. 162,729, Filed Jun. 25, 1980, Cl. 585/407, PROCESS FOR CONVERTING C3–C12 HYDROCARBONS TO AROMATICS OVER GALLIA-ACTIVATED ZEOLITE, Evan E. Davies, et al., Owner of Record: *British Petroleum Company Limited, London, England,* Attorney or Agent: Lorimer P. Brooks, et al., Ex. Gp.: 116

PATENT NOTICES

Certificates of Correction for Issue of Oct. 7, 1980

Re. 30,091	4,193,256	4,203,405	4,209,499
Re. 30,278	4,197,201	4,203,683	4,209,518
D. 254,278	4,197,247	4,203,829	4,209,555
3,916,053	4,198,374	4,203,836	4,209,611
3,924,653	4,198,573	4,204,297	4,209,782
4,082,323	4,199,030	4,204,390	4,209,810
4,154,927	4,199,404	4,204,678	4,210,541
4,156,916	4,199,461	4,205,189	4,210,560
4,156,918	4,199,479	4,205,490	4,210,948
4,174,461	4,200,485	4,205,852	4,210,995
4,176,226	4,200,521	4,205,885	4,211,150
4,177,333	4,201,282	4,206,084	4,211,507
4,179,064	4,201,295	4,206,446	4,211,665
4,179,503	4,201,572	4,207,097	4,211,792
4,180,641	4,201,660	4,207,175	4,211,847
4,182,792	4,201,769	4,207,453	4,211,932
4,183,799	4,202,394	4,207,477	4,212,023
4,186,012	4,202,603	4,207,613	4,212,216
4,188,230	4,202,975	4,207,947	4,212,633
4,189,012	4,203,170	4,208,805	4,213,745
4,192,727	4,203,401	4,209,445	4,214,020

Disclaimers

3,467,635.—*Wallace Raymond Brasen*, Claymont and *Charles Spencer Cleaver*, Wilmington, Del. COPOLYMERS OF TETRAFLUOROETHYLENE AND OLEFINS CURABLE TO ELASTOMERS. Patent dated Sept. 16, 1969. Disclaimer filed May 15, 1978, by the assignee, *E. I. du Pont de Nemours and Company*.

Hereby enters this disclaimer to claims 11, 12 and 13 of said patent.

3,966,639.—*James L. Callahan*, Bedford Heights, *Arthur F. Miller* and *Wilfrid G. Shaw*, Lyndhurst, Ohio. AMPHORA AGGREGATES. Patent dated June 29, 1976. Disclaimer filed June 18, 1980, by the assignee, *The Standard Oil Company*.

The term of this patent subsequent to November 12, 1991 has been disclaimed.

4,091,054.—*Fumio Saito, Tsurunosato Ohtsu, Fumito Yamai*, Kusatsu; *Yositugu Beppu, Shiga* and *Shinpei Nakayama*, Kusatsu, Japan. PROCESS OF PREPARING STYRENIC POLYMER PARTICLES. Patent dated May 23, 1978. Disclaimer filed June 30, 1978, by the assignee, *Sekisui Kagaku Kogyo Kabushiki Kaisha* and *Sekisui Kaseihin Kogyo Kabushiki Kaisha*.

The term of this patent subsequent to Apr. 18, 1995 has been disclaimed.

4,156,751.—*Donald M. Yenni, Jr.*, Stillwater; *Steven W. Knutsen*, New Brighton and *Edward J. Downing*, St. Paul, Minn. SHEET MATERIAL FOR FORMING ENVELOPES USED TO PROTECT ELECTRONIC COMPONENTS. Patent dated May 29, 1979. Disclaimer filed Jan. 21, 1980, by the assignee, *Minnesota Mining and Manufacturing Company*.

The term of this patent subsequent to May 15, 1996 has been disclaimed.

4,175,055.—*Glen J. Goller*, West Springfield, Mass.; *Vincent J. Petraglia*, Vernon and *Joseph R. Salonia*, Middletown, Conn. DRY MIX METHOD FOR MAKING AN ELECTROCHEMICAL CELL ELECTRODE. Patent dated Nov. 20, 1979. Disclaimer filed May 15, 1980, by the assignee, *United Technologies Corporation*.

Hereby enters this disclaimer to claims 1 through 9 of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161, for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Clairs are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

DEPARTMENT OF THE ARMY, OTJAG
Chief, Intellectual Property Division, Room 2D 444
Pentagon, Washington, D.C. 20310

Patent application 6–087,115. Laser Photochemical Synthesis and Coating of Optical Fiber. Filed Oct. 22, 1979.

Patent application 6–089,826. Touch Screen Target Designator. Filed Oct. 31, 1979.

Patent application 6–100,685. Microprocessor Controlled Digital Detector. Filed Dec. 5, 1979.

Patent application 6–112,587. Preparation of HNS From HNBB Using Oxygen. Filed Jan. 16, 1980.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St., SW., Washington, D.C. 20324

Patent 4,198,759. Optical Plummet Azimuth Reference Assembly. Filed Aug. 25, 1978. Patented Apr. 22, 1980. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Program Agreements and Patent Branch, Administration Service Division, Federal Bldg., Science and Education Administration, Hyattsville, Md. 20782

Patent application 6–099,812. Direct Extraction Process for the Production of a White Defatted Food-Grade Peanut Flour. Filed Dec. 3, 1979.

Patent application 6–118,886. A Process for Producing a Powdered Flavoring Material. Filed Feb. 6, 1980.

U.S. DEPARTMENT OF COMMERCE
National Technical Information Service, Office of Government Inventions and Patent, Springfield, Va. 22161

Patent application 6–126,591. Handcuff Improvements. Filed Mar. 3, 1980.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 6–000,740. High-Voltage Crowbar Circuit With Cascade-Triggered Series Ignitors. Filed Jan. 3, 1979.

Patent application 6–003,561. Method and Means for Measurement and Control of Pulsed Charged Beams. Filed Jan. 15, 1979.

Patent application 6–018,099. Magnetohydrodynamic (MHD) Channel Corner Seal. Filed Mar. 6, 1979.

Patent application 6–018,211. Fuel Cell Oxygen Electrode. Filed Mar. 7, 1979.

Patent application 6–028,741. Multiplexer and Time Duration Measuring Circuit. Filed Apr. 10, 1979.

Patent application 6–035,158. Ceramic Components for MHD Electrode. Filed May 2, 1979.

Patent application 6–037,077. Cooperative Heat Transfer and Ground Coupled Storage System. Filed May 8, 1979.

Patent application 6–039,427. Gas Cleaning Apparatus. Filed May 15, 1979.

Patent application 6–042,462. Nondestructive Method for Detecting Defects in Photodetector and Solar Cell Devices. Filed May 25, 1979.

Patent application 6–047,447. Cyclic Thermochemical Process for Producing Hydrogen Using Cerium-Titanium Compounds. Filed June 11, 1979.

Patent application 6–047,449. Apparatus for Generating Nonlinear Pulse Patterns. Filed June 11, 1979.

Patent 4,159,635. Isokinetic Air Sampler. Filed Aug. 24, 1978. Patented July 3, 1979. Not available NTIS.

Patent 4,161,351. All-Reflective Optical Target Illumination System With High Numerical Aperture. Filed May 7, 1976. Patented July 17, 1979. Not available NTIS.

Patent 4,161,950. Electrosurgical Knife. Filed Aug. 1, 1975. Patented July 24, 1979. Not available NTIS.

Patent 4,162,142. Tritium Labeling of Organic Compounds Deposited on Porous Structures. Filed June 29, 1978. Patented July 24, 1979. Not available NTIS.

Patent 4,162,157. Secondary Hardening Steel Having Improved Combination of Hardness and Toughness. Filed May 15, 1978. Patented July 24, 1979. Not available NTIS.

Patent 4,162,158. Ferritic Fe-Mn Alloy for Cryogenic Applications. Filed Dec. 28, 1978. Patented July 24, 1979. Not available NTIS.

Patent 4,162,401. High-Resolution, Cryogenic, Side-Entry Type Specimen Stage. Filed May 17, 1978. Patented July 24, 1979. Not available NTIS.

Patent 4,163,516. Method for Joining Metal by Solid-State Bonding. Filed Dec. 28, 1977. Patented Aug. 7, 1979. Not available NTIS.

Patent 4,164,069. Method of Preparing a Positive Electrode for an Electrochemical Cell. Filed Apr. 28, 1978. Patented Aug. 14, 1979. Not available NTIS.

Patent 4,169,884. Hydrogen Production From Water Using Copper and Barium Hydroxide. Filed Aug. 17, 1978. Patented Oct. 2, 1979. Not available NTIS.

Patent 4,170,135. Coaxial Cavity for Measuring Level of Liquid in a Container. Filed Sept. 26, 1978. Patented Oct. 9, 1979. Not available NTIS.

Patent 4,172,926. Electrochemical Cell and Method of Assembly. Filed June 29, 1978. Patented Oct. 30, 1979. Not available NTIS.

Patent 4,173,327. Solid Handling Valve. Filed June 1, 1977. Patented Nov. 6, 1979. Not available NTIS.

Patent 4,175,929. Process for Control of Pollutants Generated During Coal Gasification. Filed Aug. 29, 1978. Patented Nov. 27, 1979. Not available NTIS.

Patent 4,180,484. Ceramic Component for Electrodes. Filed June 14, 1978. Patented Dec. 25, 1979. Not available NTIS.

Patent 4,180,555. Process for Producing Hydrogen From Water Using Cobalt and Barium Compounds. Filed Aug. 17, 1978. Patented Dec. 25, 1979. Not available NTIS.

Patent 4,180,775. Magnetic Thin-Film Split-Domain Current Sensor-Recorder. Filed Mar. 16, 1977. Patented Dec. 25, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 6–117,162. Electrically Conductive Polymeric Compositions. Filed Jan. 31, 1980.

Patent application 6–136,227. Generation of Intense, High-Energy Ion Pulses by Magnetic Compression of Ion Rings. Filed Apr. 1, 1980.

Patent application 954,058. Improved Method of Infrared Laser Soldering. Filed Oct. 23, 1979.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters—NASA
Code GP–2, Washington, D.C. 20546

Patent application 6–106,192. Automatic Thermal Switch. Filed Dec. 21, 1979.

Patent application 6–126,138. Controlled Overspray Spray Nozzle. Filed Feb. 29, 1980.

Patent application 6–128,230. Memory-Based Parallel Data Output Controller. Filed Mar. 8, 1980.

Patent application 6–129,778. Computer Circuit Card Puller. Filed Mar. 12, 1980.

Patent application 6–129,780. Amplified Wind Turbine Apparatus. Filed Mar. 12, 1980.

Patent application 6–129,793. Microwave Switching Power Divider. Filed Mar. 12, 1980.

Patent application 6–129,798. Process for the Preparation of Polycarboranylphosphazenes. Filed Mar. 12, 1980.

Patent application 6–129,799. Carboranylcyclotriphosphazenes and Their Polymers. Filed Mar. 12, 1980.

Patent application 6–135,038. Method and Device for Destructive Detection of a Substance. Filed Mar. 28, 1980.

Patent application 6–135,056. Electrical Servo Actuator Bracket. Filed Feb. 20, 1980.

Patent 4,191,505. Wind Wheel Electric Power Generator. Filed Feb. 24, 1978. Patented Mar. 4, 1980. Not available NTIS.

Patent 4,193,570. Active Nutation Controller. Filed Apr. 19, 1978. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,194,115. Method and Means for Helium/Hydrogen Ratio Measurement by Alpha Scattering. Filed Nov. 7, 1978. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,195,244. Cds Solid State Phase Insensitive Ultrasonic Transducer. Filed July 26, 1978. Patented Mar. 25, 1980. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

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	Sunnyvale Patent Library*	(408) 738–5580
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Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862–1777
New Jersey	Newark Public Library	(201) 733-7740
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	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
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	Cleveland Public Library	(216) 623-2932
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*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 23, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-16-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-7-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	11-14-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-11-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	2-4-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-29-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-29-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-22-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-9-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	10-4-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	6-3-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	5-29-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	7-3-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	4-2-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during August 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,099,837 to 3,102,269, inclusive
Plant Patents ..... Numbers 2,271 to 2,276, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED OCTOBER 7, 1980

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T999,001
SACK HANDLING DEVICE

Ronald Bevan, "Whitehaven", 76 Hay St., Steeple Morden, Royston, Hertfordshire, England

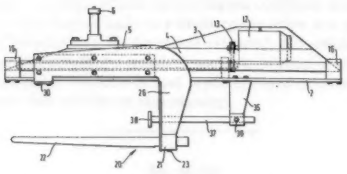
Filed Jul. 24, 1979, Ser. No. 60,125

Claims priority, application United Kingdom, Mar. 14, 1979, 09052/79

Int. Cl.³ B65G *57/10*

U.S. Cl. 414—82

3 Sheets Drawing. 7 Pages Specification



A device for handling filled sacks in a stacking machine comprises a gantry; means for securing the gantry to a transportation device; a platform for supporting the filled sacks, suspended from the gantry so as to be moveable therealong between a forward position and a retracted position; and a fence mounted in a fixed position with respect to the gantry and located above the platform to act as a barrier against movement of any sacks supported on the platform as the latter is withrawn from the forward to the retracted position.

T999,002
APPLICATION OF POLYMERIC POWDERS TO A SUBSTRATE

Henry C. Twiggs, 277 Lakeview Cir., Kingsport, Tenn. 37663; James L. Suggs, Rte. 12, Greeneville, Tenn. 37743, and Dan F. Buck, 816 Liberty Dr., Kingsport, Tenn. 37663

Filed Oct. 2, 1979, Ser. No. 81,233

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—385.5

No Drawing. 6 Pages Specification

The present invention provides a method for coating a substrate with a thermoplastic polymeric powder, especially polyester powder, by forming an emulsion containing fine particles of such powder, applying the emulsion to the substrate, and heating the coated substrate to a temperature sufficiently high to evaporate the liquid from the emulsion and thermally bond the particles to the substrate. The emulsifying agents are fatty acid esters of glycerol.

T999,003
SHIFTED PHOTOGRAPHIC DYES AND COMPOSITIONS, ELEMENTS AND PROCESSES EMPLOYING THEM

John A. Ford, and Gregory J. Lestina, both of Kodak Park Works, Rochester, N.Y. 14650

Division of Ser. No. 949,463, Oct. 10, 1978. This application Apr. 25, 1980, Ser. No. 143,659

Int. Cl.³ G03C *5/54*; C07C *107/04*

U.S. Cl. 430—223

No Drawing. 53 Pages Specification

Shifted photographic dyes which have good storage stability, yet rapidly unblock under processing conditions contain a blocked hydroxy group and a neighboring group that anchimerically assists the hydrolytic cleavage of the blocking group under processing conditions.

REISSUES

OCTOBER 7, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,410

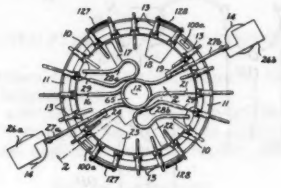
APPARATUS FOR LOADING PROPHYLACTIC DEVICES ON TEST APPARATUS

Lawrence Povlacs, Dothan, Ala., assignor to The Akwell Corporation, Akron, Ohio

Original No. 3,391,803, dated Jul. 9, 1968, Ser. No. 541,814, Apr. 11, 1966. Application for reissue Sep. 28, 1973, Ser. No. 401,908

Int. Cl.³ B65G *51/02*

U.S. Cl. 406—87 **25 Claims**



1. A machine for placing thin tubular rubber-like articles on a mandrel comprising conveyor means operable to receive randomly oriented articles in a collapsed condition and deliver such articles individually to a discharge location in a predetermined orientation with the article extended, and article receiving means including a mandrel operable to receive articles at said discharge location in said predetermined orientation and position said articles on said mandrel.

Re. 30,411

PROCESS FOR PURIFYING SODIUM HYDROXIDE

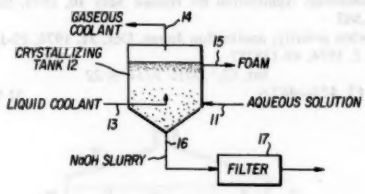
Keiichi Nakaya, Chiba; Suekazu Hirata, and Kunio Sato, both of Ichihara, all of Japan, assignors to Asahi Glass Company, Limited, Tokyo, Japan

Original No. 4,065,270, dated Dec. 27, 1977, Ser. No. 677,754, Apr. 16, 1976. Application for reissue Apr. 28, 1978, Ser. No. 901,032

Claims priority, application Japan, Apr. 28, 1975, 50-50677

Int. Cl.³ B01D *9/02*

U.S. Cl. 23—299 **17 Claims**



1. A process for purifying sodium hydroxide which [comprises] *consists of*

cooling an aqueous solution of sodium hydroxide containing soluble impurities to form a slurry containing sodium hydroxide hydrate crystals and the fine impurity crystals;

forming bubbles in said slurry, whereby said impurity crystals are adsorbed on the bubbles and float upward therewith to form a foamed scum on said slurry; and

removing said scum from said slurry, thereby separating the impurity crystals from the sodium hydroxide crystals.

Re. 30,412

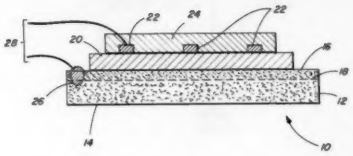
CdTe BARRIER TYPE PHOTOVOLTAIC CELLS WITH ENHANCED OPEN-CIRCUIT VOLTAGE, AND PROCESS OF MANUFACTURE

Pranab K. Raychaudhuri, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Original No. 4,035,197, dated Jul. 12, 1977, Ser. No. 671,866, Mar. 30, 1976. Continuation of Ser. No. 885,050, Mar. 9, 1978, abandoned. Application for reissue Apr. 26, 1979, Ser. No. 33,615

Int. Cl.³ H01L *31/06*

U.S. Cl. 136—255 **10 Claims**



5. A photovoltaic cell comprising

a layer of crystalline cadmium telluride, a surface of said layer being altered to contain [tellurium oxide] *an oxide form of tellurium* by heating in an oxygen containing atmosphere for between about 1 minute and about 20 minutes at a temperature between about 250° and about 500° C. the oxygen being present *in the atmosphere* in an amount that is effective to enhance the open-circuit voltage by at least 50 millivolts *compared to the open-circuit voltage of a photovoltaic cell identical in structure except for the layer of cadmium telluride which has in the surface thereof only the oxide forms of tellurium resulting from exposing said surface to air at room temperature,*

in contact with at least part of said altered surface, a layer of metal capable of forming a barrier with said cadmium telluride altered surface; and

an electrode in ohmic contact with said cadmium telluride.

8. A photovoltaic cell comprising

a layer of crystalline cadmium telluride, a surface of said layer being altered by heating in an oxygen containing atmosphere for between about 1 minute and about 20 minutes at a temperature between about 250° and about 500° C., the oxygen being present in the atmosphere in an amount that is effective to enhance the open circuit voltage by at least 50 millivolts compared to the open-circuit voltage of a photovoltaic cell identical in structure except for the layer of cadmium telluride which has in the surface thereof only the oxide forms of tellurium resulting from exposing said surface to air at room temperature, and

in contact with at least part of said altered surface, a layer of metal capable of forming a barrier with said cadmium telluride altered surface; and

an electrode in ohmic contact with said cadmium telluride.

Re. 30,413

BLEOMYCINIC ACID AND PROCESS FOR PREPARING THEREOF

Hamao Umezawa, Tokyo; Yasushi Takahashi, Hoya; Tadashi Shirai, Musashino, and Akio Fujii, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

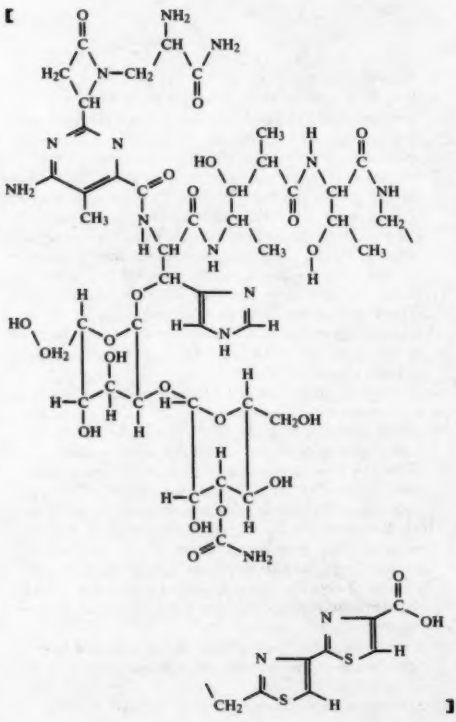
Original No. 3,932,374, dated Jan. 13, 1976, Ser. No. 479,087, Jun. 13, 1974, Division of Ser. No. 290,986, Sep. 21, 1972, Pat. No. 3,867,257, which is a continuation-in-part of Ser. No. 252,252, May 11, 1972, Pat. No. 3,843,448. Application for reissue May 24, 1979, Ser. No. 41,995

Claims priority, application Japan, May 15, 1971, 46-32232

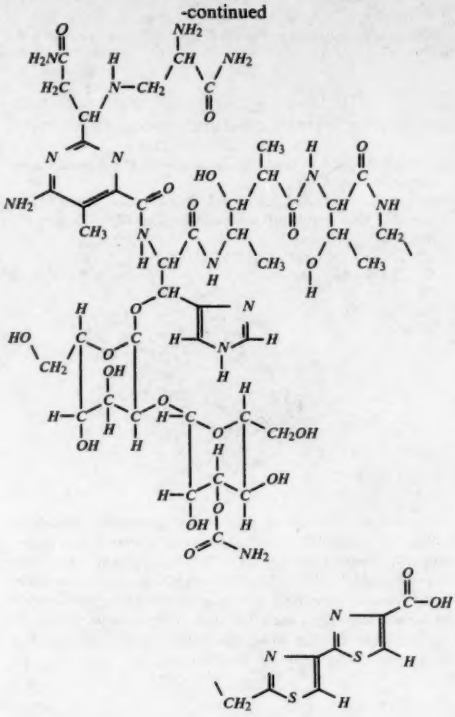
Int. Cl.[3] C07C *103/52;* A61K *37/00*

U.S. Cl. 260—112.5 R 2 Claims

1. A compound having the structure of:



-continued



Re. 30,414

PROCESS FOR PRODUCING A HIGH TENSILE STRENGTH, HIGH YOUNG'S MODULUS CARBON FIBER HAVING EXCELLENT INTERNAL STRUCTURE HOMOGENEITY

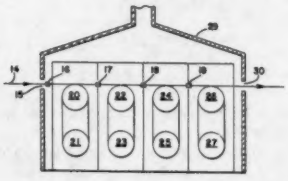
Yoshiro Kinoshita, Masaki, Japan, assignor to Toray Industries, Inc., Tokyo, Japan

Original No. 4,065,549, dated Dec. 27, 1977, Ser. No. 713,629, Aug. 12, 1976. Division of Ser. No. 622,954, Oct. 16, 1975, abandoned. Application for reissue May 10, 1979, Ser. No. 37,665

Claims priority, application Japan, Oct. 21, 1974, 49-120365; Dec. 2, 1974, 49-138217

Int. Cl.[3] D01F *9/14, 9/22*

U.S. Cl. 423—447.6 31 Claims



1. A process for producing a carbon fiber having high tensile strength which comprises oxidizing an organic polymeric fiber in an oxidizing atmosphere by intermittently contacting and removing said organic fiber on and from a heated body having a surface temperature from about 200° to about 400° C.

wherein the contact time of said organic fiber on the heated body per single contact is less than about 1 second and the temperature of said oxidizing atmosphere is maintained lower [thn] *than* the surface temperature of said heated body, and then carbonizing the oxidized fiber in a non-oxidizing atmosphere at a temperature above about 800° C.

17. A process for producing a carbonizable oxidized fiber which comprises oxidizing an organic polymeric fiber in an oxidizing atmosphere by intermittently contacting and removing said organic fiber on and from a heated body having a surface temperature from about 200° to about 400° C. wherein the contact time of said organic fiber on the heated body per single contact is less than about 1 second and the temperature of said oxidizing atmosphere is maintained lower than the surface temperature of said heated body.

Re. 30,415

SUBSTITUTED PYRROLOQUINOXALINONES AND DIONES

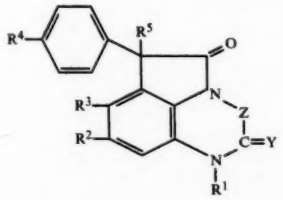
Richard E. Holmes, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Original No. 4,087,527, dated May 2, 1978, Ser. No. 836,830, Sep. 26, 1977. Division of Ser. No. 772,154, Feb. 25, 1977, Pat. No. 4,075,206. Application for reissue May 29, 1979, Ser. No. 42,848

Int. Cl.[2] A61K *31/495*

U.S. Cl. 424—250 **2 Claims**

3. A method of treating vascular thrombosis in mammals which comprises administering to a mammal in need of such treatment an amount of a compound of the formula effective for treating vascular thrombosis.



wherein

R^1 is H or C_1–C_3 alkyl; when taken singly,

R^2 is H, C_1–C_3 alkyl, C_1–C_3 alkoxy, F or Cl and R^3 is H; and

R_2 and R^3 when taken together with the carbon atoms to which they are attached form a benzene ring;

R^4 is H, Cl or F;

R^5 is OH, H or phenyl;

Y is O or H_2;

Z is $—CH_2—CH_2—$ or $—CHR^6—$ wherein R^6 is H or C_1–C_3 alkyl.

Re. 30,416

AUTOMATIC PROGRAM LOCATOR FOR TAPE DECKS

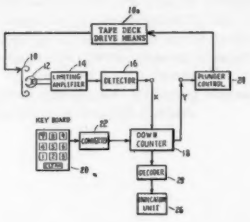
Tatsuhiro Yasunaga, Higashihiroshima, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Original No. 4,014,039, dated Mar. 22, 1977, Ser. No. 571,411, Apr. 24, 1975. Application for reissue May 23, 1978, Ser. No. 908,655

Claims priority, application Japan, Apr. 24, 1974, 49-61056

Int. Cl.[2] G11B *15/16, 15/18, 15/44*

U.S. Cl. 360—72.1 **24 Claims**



1. An automatic program locating system for tape reproduction systems comprising:

a. a sensing head in physical contact with a tape when the tape reproduction system is in the fast forward or rewind drive mode;

b. recorded passage detection circuit means connected to receive signals from the sensing head for generating a silence detection signal when the sensing head reaches a silence portion between recorded programs;

c. down counter means which counts down one count in response to each occurence of a silence detection signal;

d. key input means for introducing a desired number into the down counter,

e. count output detection circuit means for generating a control signal when the down counter counts from said desired number down to zero; and

f. shifting means for shifting the operational states of the tape reproduction system upon receiving the control signal.

PLANT PATENTS

GRANTED OCTOBER 7, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,599

ALSTROEMERIA PLANT NAMED YELLOW KING

M. C. van Staaveren, 30, Hornweg, 1432 GM Aalsmeer, Netherlands

Filed Apr. 23, 1979, Ser. No. 32,677
Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of alstroemeria plant substantially as herein shown and described, characterized by the distinctive darkish yellow overall coloring of its flower petals, its substantially continuous production of flowers, and the long-lasting quality of the flowers both on the stem and as cut flowers.

4,600

ALSTROEMERIA NAMED PINK TRIUMPH

M. C. van Staaveren, 30, Hornweg, 1432 GM Aalsmeer, Netherlands

Filed Apr. 23, 1979, Ser. No. 32,679
Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct alstroemeria cultivar substantially as herein shown and described, characterized by the distinctive overall red-pink coloring of the outer petals of its flowers and the sharply contrasting deep yellow coloring of its nectar-bearing inner petals, its abundant and substantially continuous production of flowers during each blooming season, and the long lasting quality of the individual blooms.

PATENTS

GRANTED OCT. 7, 1980

ERRATA

For CLASS	See PATENT NO.
368–066	4,226,081
368–285	4,226,082
074–688	4,226,123
474–082	4,226,130
474–082	4,226,131
474–082	4,226,132
474–042	4,226,133
474–181	4,226,134
074–606 R	4,226,200
440–112	4,226,206
224–318	4,226,354
023–230 B	4,226,713
424–273 P	4,226,773
556–470	4,226,793
556–443	4,226,794
568–386	4,226,810
568–937	4,226,811
570–157	4,226,812
428–304	4,226,886
424–059	4,226,889
544–321	4,227,000
370–004	4,227,075
375–013	4,227,152

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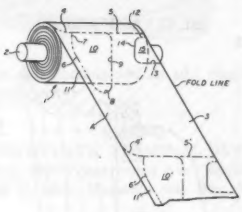
PATENTS

GRANTED OCTOBER 7, 1980

GENERAL AND MECHANICAL

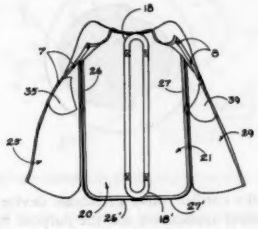
4,225,977
ROLL OF PLASTIC FILM APRONS
Buford B. Smith, P.O. Box 3353 109 N. Duncan Rd., Champaign, Ill. 61820
Filed Jul. 23, 1979, Ser. No. 59,638
Int. Cl.[2] A41B *13/10*
U.S. Cl. 2—48 **3 Claims**



1. A roll of plastic film aprons comprising
an elongated strip of plastic film folded in half longitudinally in substantially extended lengths and wound in said longitudinally folded form as a roll on a core or roller,
said longitudinally folded film having a plurality of perforations and cut lines defining a plurality of longitudinally folded aprons connected end to end in said roll,
a first set of said perforations and cut lines being spaced longitudinally along said strip at predetermined equally spaced intervals and extending transversely to said strip from the fold line thereof and terminating in a curved end portion at the edges of said strip,
a second set of cut lines defining an extended, arcuate cut out portion beginning at said curved end portion of said first perforations or cut lines, extending longitudinally along a line inclined toward the center, curving transversely, and then extending back to said transversely extending perforations or cut lines and terminating in an end portion curved toward the edge of said strip, to define tie straps on each side of said aprons,
a third set of perforations and cut lines adjacent to and spaced from said first perforations, extending along an arcuate line from and returning to the fold line of said strip, and defining a subsequently removable portion for producing a neck opening in said apron, and
said aprons being severable one by one from said roll along said first set of perforations and cut lines and having tie straps extending upward from a base portion and having a central neck opening when unfolded.

4,225,978
COMBINATION CAPE AND UTILITY BAG
Larry L. Howerton, 2607 McKinney St., Boise, Id. 83704
Filed Mar. 12, 1979, Ser. No. 19,2[illegible]
Int. Cl.[2] A41D *3/08*
U.S. Cl. 2—88 **10 Claims**

1. A combination cape and utility bag comprising:
means forming a substantially rectangular back panel, said back panel including a first handle member secured adjacent the top central surface thereof, and a second cooperating handle member secured adjacent the bottom central surface thereof;
means forming a first front panel and having a collar opening, said first front panel permanently joined to said back panel along one vertical edge and the top thereof;
means forming a second front panel having a collar opening mateable with the collar opening of said first front panel to define a substantially circular collar opening, said second front panel permanently joined to said back panel along an opposing vertical edge and top, whereby a cape is formed;
releaseable fastening means extending along the top peripheral edge of said back panel from substantially the vertical midpoint of one edge to substantially the vertical midpoint of the opposing edge; and



a cooperating fastening means extending along the bottom peripheral edge of said back panel from substantially the vertical midpoint of one edge to substantially the vertical midpoint of the opposing edge to define a utility bag when fastened to said releaseable fastening means.

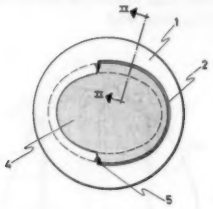
4,225,979
TOTAL OR PARTIAL URETERAL PROSTHESIS
Pierre Rey, 18 rue Aristide Briand, 77400 Thorigny; Jacqueline Leandri, 50 Avenue de Clichy, 75018 Paris, and Clement Abbou, 43 Av. de la Dame Blanche, 94120 Fontenay Sous Bois, all of France
Filed Nov. 28, 1978, Ser. No. 964,433
Claims priority, application France, Nov. 28, 1977, 77 35685
Int. Cl.[3] A61F *1/24, 1/00*; A61M *27/00*
U.S. Cl. 3—1 **20 Claims**

1. Total or partial ureteral prosthesis for an organism characterized in that it comprises a generally tubular device with pump effect having an upstream end and a vesical end, compatible with urine and with the organism, made from flexible plastic material which is compatible with the surrounding tissues, which device presents a permanent set distortion on at least one point of its course which modifies the aforesaid course, and is provided with an anti-reflux valve at least on its vesical end, which valve cooperates with the aforesaid set distortion to vary the volume of the aforesaid prosthesis under the action of the physiological movements of the organism, thus creating the desired pump effect.

4,225,980
METALLIC CARDIAC VALVE PROSTHESIS

Wilson Ramos Martinez, Avda. Generalisimo, 96 - piso 16 Apto. 10, Madrid, Spain

Filed Nov. 28, 1978, Ser. No. 964,442
Claims priority, application Spain, Jan. 7, 1978, 465.824
Int. Cl.[3] A61F 1/22
U.S. Cl. 3—1.5 4 Claims



1. A metallic cardiac valve prosthesis device having both aortic and mitral application and the purpose of which is to provide an ample, highly physiological and laminar flow of blood, said device comprising:

a valve body in the form of a single and integral ring-shaped member having an oval-shaped inner periphery;

said ring-shaped member having formed therein first and second recesses respectively defining first and second substantially planar steps, said first recess opening toward a first axial end of said ring-shaped member, said second recess opening toward a second axial end of said ring-shaped member, said first recess extending along a first circumferential portion of said inner periphery, said second recess extending along a second circumferential portion of said inner periphery, and said second circumferential portion being greater than said first circumferential portion;

said first and second recesses having adjacent first ends defined by a pair of respective first end faces positioned adjacent to each other, and said first and second recesses having adjacent second ends defined by a pair of respective second end faces positioned adjacent to each other;

said ring-shaped member having integrally formed therewith first and second pivots extending inwardly from said ring-shaped member at positions respectively adjacent said pairs of first and second end faces;

a venticular plug in the form of an oval-shaped flat member having formed in the periphery thereof first and second spaced inwardly extending grooves;

said flat member being positioned such that said first and second pivots pivotally extend into said first and second grooves, respectively, such that said flat member pivots with respect to said ring-shaped member, between closed and opened positions, about an imaginary pivot axis extending through said pivots and grooves and substantially parallel to and spaced from the minor axis of the oval shape of said flat member;

said first and second planar steps being in planes spaced from each other axially of said ring-shaped member by a distance substantially equal to the thickness of said flat member, and said flat member having opposite substantially planar first and second surfaces respectively contacting said first and second planar steps when said flat member is in said closed position;

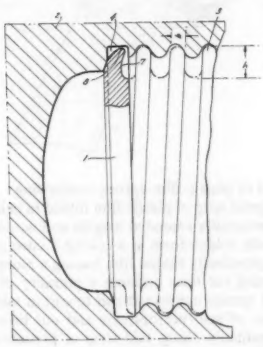
said first and second end faces being substantially planar and abutting said opposite surfaces of said flat member when said flat member is in said opened position; and

said first end faces being spaced from each other and said second end faces being spaced from each other by amounts sufficient to enable said flat member, when in said opened position, to extend at an angle of from 80° to 85° with respect to the position of said flat member when in said closed position.

4,225,981
ENDO PROTHESIS WITH A METAL-CERAMIC UNION

Anton Zeibig, Ottensoos, Fed. Rep. of Germany, assignor to Rosenthal Technik AG, Bavaria, Fed. Rep. of Germany

Filed Aug. 22, 1978, Ser. No. 935,804
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1977, 2742098
Int. Cl.[3] A61F 1/03
U.S. Cl. 3—1.913 17 Claims



1. A bone joint endoprosthesis comprising:

a metal shaft having a spigot defined thereon; said spigot having an external thread defined thereon; said external thread being comprised of a raised rib extending around said spigot; said external thread rib having a profile height, which is the radial height of said rib on said spigot, and having a profile width, which is the longitudinal length of said rib along said spigot;

a ceramic head having an opening defined therein in which said externally threaded spigot is received; said opening being defined by a side wall which is internally threaded with an internal thread which is mated with said spigot external thread; said internal thread being comprised of a groove into said side wall in said opening and said external thread rib being received in said groove; and said internal thread having a profile height into said side wall which is less than said profile height of said external thread rib.

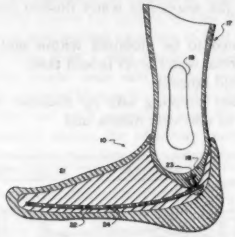
4,225,982
MOLDED SYME FOOT WITH ATTACHED STUMP SOCKET

Ian W. Cochrane, 87 Wexford St. N., Winnipeg, Manitoba, Canada (R3R 0R6); Frederick R. Tucker, deceased, late of Winnipeg, Canada; by Mary Tucker, co-executrix, 138 Buxton Rd., Winnipeg, Manitoba, Canada; by George Ackerman, co-executor, 12 Beaumont Bay, Winnipeg, Manitoba, Canada, and by Canada Permanent Trust Co., co-executor, 433 Portage Ave., Winnipeg, Manitoba, Canada (R3B 2C9)

Filed Dec. 4, 1978, Ser. No. 966,362
Int. Cl.[3] A61F 1/08, 1/02, 1/04
U.S. Cl. 3—7 18 Claims

1. A Syme foot prosthesis comprising in combination a precast foot including a keel cavity and a custom formed stump socket engaged within the opening of the foot, said socket

including a distal cup portion, an elastomeric material filling said keel cavity and means securing the distal end of said stump



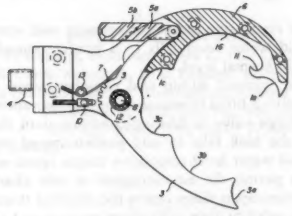
socket within said opening and to said elastomeric material filling said heel cavity.

4,225,983

PROSTHETIC TERMINAL DEVICE

Robert Radocy, 2860 Pennsylvania Ave., Boulder, Colo. 80303, and Ronald E. Dick, Magnolia Star Rte., Nederland, Colo. 80466

Filed Nov. 2, 1978, Ser. No. 957,338
Int. Cl.³ A61F 1/06
U.S. Cl. 3—12 **10 Claims**



1. A prosthetic, voluntary closing hand comprised of a wrist adaptor an index member extending therefrom, a thumb member pivoted to the index member, a bias spring engaging said thumb member to urge the thumb member to open position with respect to said index member, and a cable to urge said thumb member towards said index finger in closing position for hand grasping functions,

(A) said index member having a movable thumb locking device mounted thereon, and a first inner surface defining three cooperating gripping surfaces extending along its length,

(B) said thumb member having a plurality of locking receptacles for receiving said movable thumb locking device to selectively lock said thumb in a plurality of angular positions with respect to said index member, and a second inner surface facing said first inner surface defining three cooperating gripping surfaces along its length for cooperation with the index member gripping surfaces to grasp objects of different size and;

(C) said wrist adapter incorporating a standard threaded bolt for attachment to wrist units found on standard arm prosthesis.

4,225,984

PORTABLE THERAPEUTIC WATER MASSAGE MECHANISM

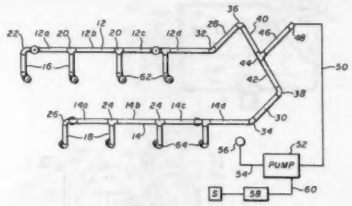
Donnie R. Lindsey, P.O. Box 6428, Baytown, Tex. 77520

Filed Apr. 5, 1979, Ser. No. 27,526
Int. Cl.³ A47K 3/10; A61H 9/00
U.S. Cl. 4—541 **10 Claims**

1. A portable therapeutic water massage handling mechanism for use in conjunction with conventional bathtubs, said mechanism comprising:

pump means having suction conduit means and discharge conduit means, said suction conduit means adapted to terminate in the water of said bathtub, allowing said pump to withdraw water from said bathtub;

a pair of elongated water distribution conduits adapted to be removably positioned in spaced relation within said bathtub and being extendable along the inner side walls of said bathtub;



a plurality of water jets being positioned in spaced relation along the length of each of said water distribution conduits for directing jets of water toward specific parts of the anatomy of a person within said bathtub; and

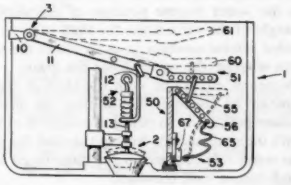
connection means interconnecting said discharge conduit means and said water distribution conduit means, whereby water discharged from said pump is conducted to said water distribution conduit means.

4,225,985

VALVED VOLUME DIVIDING MEANS

Devendra C. Joshi, 1066 Oak St., Neenah, Wis. 54956, and Virendra N. Sharma, 1400 Linda Ave., Menasha, Wis. 54952

Continuation of Ser. No. 816,900, Jul. 18, 1977, Pat. No. 4,143,430. This application Feb. 2, 1979, Ser. No. 8,834
The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.
Int. Cl.³ E03D 1/14, 3/12
U.S. Cl. 4—324 **6 Claims**



1. A water closet discharge regulating means comprising:

(a) a minitank unit whereby a toilet tank is divided into water retaining compartments: a first compartment and a second compartment,

(b) a port in the minitank unit through which water may pass between the first compartment and the second compartment,

(c) a valve which serves to seal and open the port,

(d) an actuator linking unit by means of which the valve is operably connected to an existing flush arm of the tank,

(e) an adjustment means which is employable to set the degree of rotation of the flush arm needed for a valve opening, and

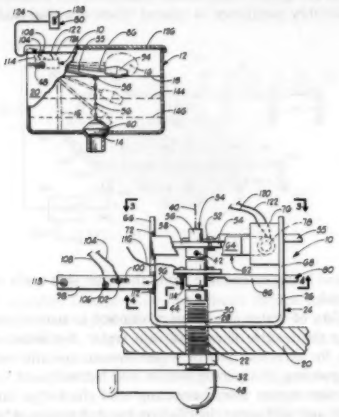
(f) means for providing that the minitank unit, the actuator linkage unit, and the adjustment means are directly installable in the toilet tank without modifying or significantly disturbing the existing in-tank mechanisms and the installation of the discharge regulating means requires no specialized tools and no specialized skills.

4,225,986

WATER RELEASE MECHANISM

Eugene M. Mauk, 3320 W. Oklahoma, Enid, Okla. 73701

Filed Jun. 25, 1979, Ser. No. 51,833
Int. Cl.[2] E03D *1/14, 3/12*
U.S. Cl. 4—324 **12 Claims**



1. A mechanism for releasing a selected volume of water from a tank, comprising:

a shaft assembly secured to the wall of the tank, comprising:

a bracket inside the tank;

a bushing connected to the bracket and extending through a hole in the wall of the tank; and

a shaft extending through the bushing and supported thereby for positioning of the shaft in a preselected water release position and for pivotation of the shaft from the water release position;

a valve support arm fixed on the support arm and extending laterally therefrom, wherein a drain for the tank is formed below extensive portions of the valve support arm;

a valve suspended from the valve support arm over the drain in the water release position of the shaft, whereby the weight of the valve urges the shaft to pivot away from the water release position so as to lower the valve to a position wherein the valve closes the drain;

latch means, engagable with the shaft in the water release position of the shaft, for holding the shaft in the water release position in an engaged condition of the latch means with the shaft and for freeing the shaft for pivotation from the water release position in a disengaged condition of the latch means with the shaft;

latch release means for placing the latch means in the disengaged condition thereof with the shaft in response to an electrical signal;

signal generator means responsive to the depth of water in the tank for providing the electrical signal to the latch release means at a preselected water depth; and

means for introducing water into the tank at such times that the depth of water therein is less than a preselected depth.

4,225,987

VARIABLE VOLUME CONTROL FOR TOILET FLUSH TANKS

Harley R. Goldman, 8 Russell Dr., Mineola, N.Y. 11501, and Stewart Hall, 138-10 Jewel Ave., Flushing, N.Y. 11367

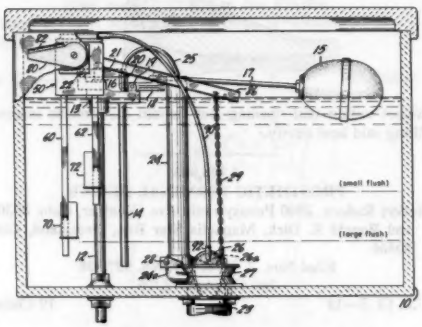
Filed Sep. 4, 1979, Ser. No. 72,284
Int. Cl.[2] E03D *1/24, 5/02*
U.S. Cl. 4—325 **20 Claims**

1. For use in a toilet flush tank normally filled with flushing water to a prescribed level, said tank having a flush discharge opening at the bottom and a discharge valve for closing the discharge opening, said discharge valve having an air chamber open at the bottom and adapted to be lifted to flush water from the tank through the discharge opening, flush control apparatus for regulating the amount of water flushed from the tank comprising,

a housing adapted to be mounted within said flush tank above the normal water level in said tank,

vent means in said housing,

air passage means coupling said air chamber in said discharge valve to said vent means, and



water level responsive means for opening said vent means when said water level falls to a predetermined height below said normal level,

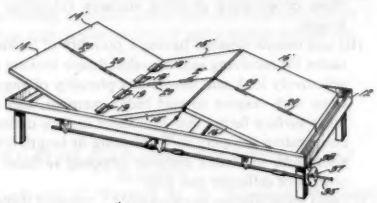
whereby air trapped within said chamber when the discharge valve is lifted to initiate a flushing operation retains the discharge valve in floating condition until the water level in the tank falls to said predetermined height at which said water level responsive means opens said vent means to permit the air entrapped in said chamber to escape, whereupon water enters the chamber to cause the discharge valve to drop to its seated position and close the discharge opening.

4,225,988

ORTHO-TURN BED

George R. Cary, 3439 Prytania St., New Orleans, La. 70115, and Noelie B. Pfisterer, 6970 Argonne Blvd., New Orleans, La. 70124

Filed Jan. 30, 1979, Ser. No. 7,824
Int. Cl.[3] A61G *7/10*
U.S. Cl. 5—61 **13 Claims**



1. A bed assembly comprising:

a frame;

a plurality of mattress support members adapted to be supported by said frame, including at least three first members, and at least three second members;

first pivot means for mounting said first members with respect to each other and said second members with respect to each other, so that said members are movable from a first position wherein said first members are substantially planar with each other and with said second members, to

a second position wherein said first and second members assume an articulated position with respect to a straight line interconnecting the centers of said member;

second pivot means for mounting said first members with respect to said second members so that said first members are movable from a first position wherein they are substantially planar with said second members, to a third position wherein they make a positive angle relative to the horizontal and with respect to said second members;

first actuating means for effecting movement of second members about said first pivot means from said first to said second position, and vice versa; and

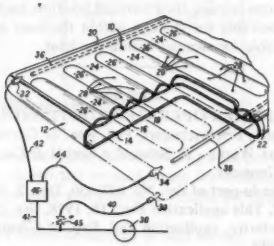
second actuating means for effecting movement of said first members about said second pivot means from said first to said third position thereof, and vice versa; said second actuating means comprising lever means operatively attached to at least one of said first members, a shaft, and force transmitting means for interconnecting said shaft and said lever means for transforming rotation of said shaft into movement of said lever means to effect pivoting of said first members about said second pivot means, without interference with said first actuating means.

4,225,989

INFLATABLE SUPPORTS

Aubrey E. Corbett, Kenilworth; Siu L. Ho, Coventry, and Ronald J. Clark, Sidmouth, all of England, assignors to Glynwed Group Services Limited, Birmingham, England

Filed Oct. 5, 1978, Ser. No. 948,798
Int. Cl.[2] A61G *7/04*; A47C *27/10*
U.S. Cl. 5—453 **9 Claims**



1. An inflatable body support comprising an upper inflatable layer and a lower inflatable layer, the upper layer comprising upper and lower surfaces sealed together providing a plurality of separate air passages which are independently inflatable and deflatable and which air passages, taken together, are distributed over the area of the upper layer with each air passage including a series of enlongated tubes, such that the tubes of different air passages are juxtaposed, the upper surfaces of the tubes being convexly curved, taken transverse to the direction of elongation, to present a series of generally parallel curved surfaces which support the body located thereon, said lower inflatable layer being located directly beneath the upper layer and being inflatable separately from the upper layer and continuously over substantially the entire area directly beneath the upper layer, such that the lower layer, when inflated, continuously and directly supports substantially the entire area of the upper layer, such that the extent of the said curved surfaces of the tubes which acts to support the person thereon is dependent upon the degree of inflation of the lower inflatable layer, and the upper surface of the upper layer includes means for permitting limited air bleeding therethrough.

4,225,990

CRIMPING TOOL FOR AUTOMOTIVE IGNITION TERMINALS AND THE LIKE

Werner C. Theiler, Sr., Dix Hills, N.Y., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Oct. 16, 1978, Ser. No. 951,491
Int. Cl.[3] B25B *7/22*
U.S. Cl. 7—107 **16 Claims**

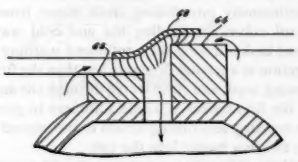
1. A crimping tool for automotive ignition terminals and the like, said tool comprising: a pair of pivotally connected levers, a cut-off edge on one lever adjacent to the other lever, an anvil on the other lever facing toward said cut-off edge for abutting engagement therewith to sever a wire, a pair of insulation stripping knife edges on said levers for cutting engagement with insulation of an interposed wire, one of said knife edges extending beyond the adjacent portion of its lever and the other of said knife edges being recessed into its lever for receiving one knife edge when said knife edges are in said limiting position, said knife edges extending toward and terminating short of each other in a limiting position with said anvil and cut-off edge abutting to leave an unsevered insulation tag, and said knife edges having facing notches for receiving a wire core without severance.

4,225,991

FABRIC WASHING SYSTEM

Joseph A. Bolton, Glens Falls, and Olavi A. Huhtala, Scotia, both of N.Y., assignors to Albany International Corp., Menands, N.Y.

Filed Apr. 12, 1979, Ser. No. 29,540
Int. Cl.[3] D06B *1/02, 15/00*
U.S. Cl. 8—151 **19 Claims**



9. A method for cleaning and drying a porous fabric such as carpet comprising the steps of:

wetting a fabric;

passing said fabric through a gap between a vacuum source and backup means positioned opposite said source, said backup means preventing the flow of air directly through said fabric and causing it to flow in an indirect route into said vacuum source; and

arranging said vacuum source and said backup means such that air flows substantially only in one direction through said fabric and gap into said vacuum source.

12. A device for extracting liquid from a porous fabric comprising:

a vacuum source, said source including a vacuum slot defined by a stepped structure including a slot entrance surface and a slot exit surface over which a fabric may pass, said slot exit surface having a greater height than said slot entrance surface; and

backup means positioned opposite said vacuum source such that said fabric must pass through a gap between said vacuum source and said backup means.

4,225,992

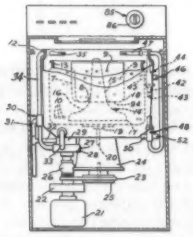
CLOTHES WASHING METHOD

Everett D. Morey, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Division of Ser. No. 848,536, Nov. 4, 1977, Pat. No. 4,175,409, which is a continuation-in-part of Ser. No. 695,585, Jun. 14, 1976, abandoned. This application Jun. 26, 1979, Ser. No. 52,299

Int. Cl.[2] **D06F** *37/00*

U.S. Cl. 8—158 **4 Claims**



1. The method of washing clothes in a vertical axis clothes washing machine having a wash fill, wash, spin extraction, rinse fill, rinse, and spin extraction operations including a tub, an agitator, a first basket within the tub, water control valves for feeding hot and cold water into the machine at a first flow rate, electrically powered drive means for operating the agitator to effect washing of the fabrics and for rotating the basket and agitator in unison to centrifugally extract water from the fabrics, communication means to allow water to flow from the basket into the tub, drain means to take water from the tub and direct it to an external drain during spin extraction, the improved method including:

(a) placing a second basket within the first basket and positioned on the agitator for movement therewith;

(b) placing fabrics to be washed in only the second basket;

(c) continuously introducing fresh water from the water control valves for feeding hot and cold water into the second basket during the continuous washing and rinsing operation at a second flow rate less than the first flow rate;

(d) flowing wash and rinse water through the second basket into the first basket at a rate sufficient to prevent a bath type washing and rinsing action in the second basket, and from the first basket into the tub;

(e) oscillating the agitator and second basket with the agitator in unison during the continuous washing and rinsing of the fabrics in the second basket;

(f) pumping water from the tub to an external drain during the continuous washing and rinsing operation;

(g) stopping both the flow of water into the second basket and the oscillation of the agitator and second basket; and

(h) spinning the basket to centrifugally extract water from the fabrics while pumping the water from the tub to an external drain.

4,225,993

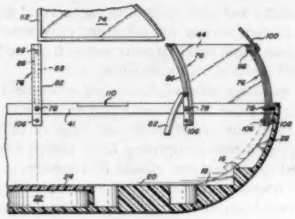
CIRCULAR LIFEBOAT

Donald A. Hay, deceased, late of Bethesda, Md. (by Robert D. Hay, personal representative)

Filed Jun. 1, 1978, Ser. No. 911,428

Int. Cl.[2] **B63C** *9/02*

U.S. Cl. 9—4 R **3 Claims**



1. A circular lifeboat having a bowl shaped configuration including a flat bottom and a rounded circular hull, the interior of the lifeboat including a plurality of concentrically arranged seats, and a continuous partition positioned around the perimeter of the lifeboat and extending upwardly to provide an additional area of free-board, said partition including a plurality of plastic panels, each panel having its opposite edges supported by a pair of upwardly extending rotatable arms, each of said rotatable arms pivotally connected to the upper edge of the boat hull, and is movable from a normally stored position within the confines of the upper edge of the boat hull and to an upright active position wherein each arm is positioned vertically, each arm being provided with a pair of longitudinally extending slots positioned on opposite edges thereof for receiving edges of plastic panels, each of said arms is further provided with a slot for receiving an end of a top supporting rib when the arms occupy their vertical position, each panel being readily removable for storage within the boat and each arm being rotatable for storage within the boat.

4,225,994

POWER-OPERATED TOOTHBRUSH

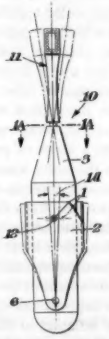
Werner Stoltz, Friedrichsdorf, Fed. Rep. of Germany, assignor to Blendax-Werke - R. Schneider GmbH & Co., Mainz, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 857,030, Dec. 2, 1977, Pat. No. 4,149,291. This application Dec. 18, 1978, Ser. No. 970,227

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757590

Int. Cl.[3] **A46B** *13/02*

U.S. Cl. 15—22 R **8 Claims**



1. A power operated toothbrush comprising a housing, a

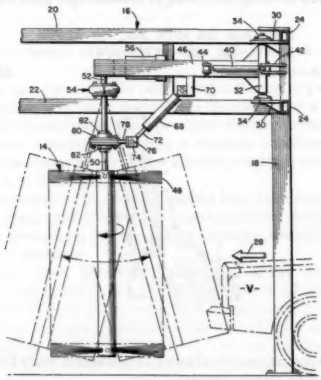
replaceable movable brush mounted on the end of the housing, power-operated means in the housing for causing the brush to move in a predetermined path of movement, a reversing switch on the housing for causing the power-operated means to move the brush in two different directions, a handle section, coupling means connecting the handle section to the reversing switch for actuating it, a handle section motion-permitting means mounting the handle section on the housing whereby movement of the handle section relative to the housing causes the actuation of the reversing switch in both of its directions.

4,225,995

BRUSH ASSEMBLY FOR VEHICLE WASHING APPARATUS HAVING A FLEXIBLE ELASTIC COUPLING

George T. Ennis, Playa Del Rey, Calif., assignor to N/S Car Wash Enterprises, Inc., Sharon, Pa.

Filed Mar. 6, 1978, Ser. No. 883,514
Int. Cl.[2] B60S 3/06
U.S. Cl. 15—53 AB **32 Claims**



1. In a vehicle washing apparatus having a support frame, a brush assembly supported by said frame for washing one or more of the front, side and rear of a vehicle moving relative thereto comprising:

brush support means connected to said frame;

a brush for washing the vehicle moving relative thereto;

a shaft for supporting said brush in a normal operating position;

a coupling device for coupling said shaft to said brush support means, said coupling device comprising flexible coupling means responsive to the force of the vehicle against said brush for flexing freely in any direction to tilt said brush, said flexible coupling means, upon flexing in any direction, further generating a restoring force equal in all directions to urge said brush toward its normal operating position; and

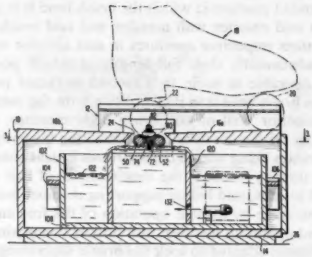
motor means coupled to said shaft for rotating said shaft and said brush in the opposite direction at the surface of the vehicle to the direction of movement of said brush assembly relative to the vehicle to generate a rotary reaction force against the vehicle which walks said brush along the surfaces of the vehicle, said motor means cooperating with said flexible coupling means by generating a rotary reaction force which adds to the restoring force caused by the flex of said flexible coupling means to walk said brush around one or more of the front, side and rear surfaces of the vehicle to thereby wash the vehicle.

4,225,996

ROLLER SKATE WHEEL CLEANING APPARATUS

Richard E. Hoos, 756 Hill Rd., Brentwood, Tenn. 37027

Filed Jun. 4, 1979, Ser. No. 45,354
Int. Cl.[3] A63C 3/00; A47L 23/00
U.S. Cl. 15—97 R **10 Claims**



1. A roller skate wheel cleaning apparatus for cleaning the wheels of a roller skate having a front pair of wheels and a rear pair of wheels, and comprising:

a housing;

a pair of parallel horizontal roller means for simultaneously frictionally engaging the skating surfaces of both wheels of a pair of skate wheels, said roller means being mounted for rotation relative to said housing and being spaced apart;

scouring means for cleaning the skate wheels and being mounted in the space between said roller means for engaging said surfaces of said skate wheels when said roller means are frictionally engaging said skate wheels;

drive means for driving at least one of said roller means so that, when said roller means are frictionally engaging the skate wheels, the skate wheels are rotated to continuously move the surfaces thereof across said scouring means; and

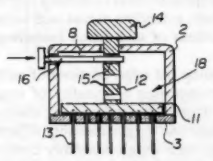
a container of cleaning fluid mounted in said housing below said roller means so that the surfaces of said roller means contact the cleaning fluid and are wetted thereby.

4,225,997

SELF-CLEANING BRUSH

William J. Thomas, #107-11771 King Rd., Richmond, British Columbia, Canada (V7A 3B5), and John E. Adam, 54 Qualicum St., Ottawa, Ontario, Canada (K2H 7M4)

Filed Jan. 11, 1979, Ser. No. 2,798
Int. Cl.[3] A46B 7/00
U.S. Cl. 15—184 **9 Claims**



1. A self-cleaning brush comprising a brush body member comprising a posterior wall having a first opening therethrough, an anterior wall member having therein a plurality of spaced apertures, and a side wall integrally joined with the posterior and anterior walls, said walls defining a hollow compartment in the interior of the body member, said first opening in said posterior wall communicating with said hollow interior compartment; a bristle supporting member generally disposed within the hollow compartment and comprising a brush head from whose lower surface a plurality of bristles extend in

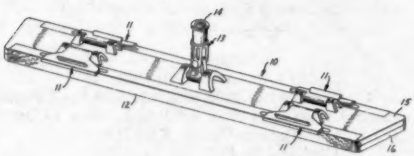
registration with the apertures in said anterior wall member; and a brush head operating member integral with the upper surface of the brush head, and extending in a plane perpendicular to the axis of the brush body member through said first opening in the posterior wall, and projecting above said posterior wall; said brush head operating member being adapted to move reciprocably within the hollow compartment from a first fully extended position in which the brush head is in juxtaposition with said anterior wall member and said bristles project through their respective apertures in said anterior wall member, to substantially their full length, at which position the brush is operable as such; to a second retracted position in which the brush head is in juxtaposition with the inner surface of the posterior wall of said brush body member, at which position the bristles are fully retracted within the body, the tips of said bristles being within the apertures in said anterior wall member, thereby to allow the easy removal of hair or debris from said bristles; said bristle supporting member being reciprocably movable by manual operation of the free end of said brush head operating member; and further comprising a locking mechanism adapted to lock the bristle supporting member when the brush is in use, said locking mechanism comprising a lever member which extends from the exterior of the brush body adjacent the side wall through a second opening formed in the brush body, in a plane normal to the longitudinal axis of said brush body, and at least one recess formed in the bristle supporting member and adapted to receive at least the inner end portion of the lever member, said lever member being reciprocably movable into and out of engagement with said recess in said bristle supporting member by manual operation of its free end, such manual operation being facilitated by a knob which is attached to said free end of said lever member.

4,225,998

DUST MOP FRAME

James E. Thielen, New Brighton, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Mar. 20, 1979, Ser. No. 22,312
Int. Cl.[3] A47L 13/256, 13/29
U.S. Cl. 15—231 **8 Claims**



1. A dust mop frame having opposite top and bottom surfaces and being adapted to receive dusting fabric with a central portion of said fabric extending across said bottom surface and opposite edge portions of said frame extending onto said top surface; and

means for retaining the edge portions of said fabric on said top surface comprising a plurality of toggle assemblies, each of said toggle assemblies being disposed in opposed sets with at least one toggle assembly adjacent each of said edge portions, each toggle assembly comprising:

a toggle member having a pivot axis, an arm portion projecting generally radially from said axis, a lip portion spaced from said axis, projecting from one side of said arm portion and extending parallel to said axis, and a curved portion having an arcuate surface disposed around said pivot axis;

means mounting said toggle member on said frame for positionable pivotable movement around said axis between a release position with said lip spaced from the top surface of said frame to afford insertion of the edge portion of said dusting fabric therebetween, and an engage position with said lip pressing the edge portion of said dusting fabric therebetween against said top surface;

a spring mounted on said frame and having a portion adapted to frictionally engage and slide along said arcuate surface upon movement of said toggle member between said release and engage positions; and

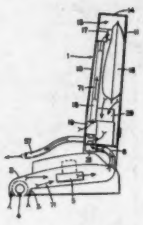
the adjacent surfaces of said frame and said lip being shaped to hold the edge portion of said fabric therebetween when said toggle member is in its engage position thereby to restrict the withdrawal of the fabric.

4,225,999

MULTI-MOTOR SUCTION CLEANER CONSTRUCTION

Eugene F. Martinec, East Cleveland, and Nora Robinson, Cleveland, both of Ohio, assignors to Health-Mor Inc., Cleveland, Ohio

Filed Apr. 20, 1979, Ser. No. 31,988
Int. Cl.[3] A47L 5/14
U.S. Cl. 15—300 A **32 Claims**



1. Multi-motor suction cleaner construction including

(a) a suction nozzle housing,

(b) a first motor-fan unit in the housing in communication with the suction nozzle,

(c) an operating handle for the cleaner connected to the housing,

(d) a closed suction compartment carried by the handle,

(e) dust bag means removably mounted in the compartment,

(f) airflow passage means connecting said first motor-fan unit with the dust bag means,

(g) said passage means including a converter receptacle mounted in the compartment,

(h) a second motor-fan unit mounted in the compartment having a suction inlet in communication with the suction compartment,

(i) converter means including a flexible hose having a connector end,

(j) the converter means connector end being removably connected with the converter receptacle and when so connected simultaneously blocking communication through said passage means between said first motor-fan unit and the dust bag means and establishing communication between the flexible hose and the dust bag means,

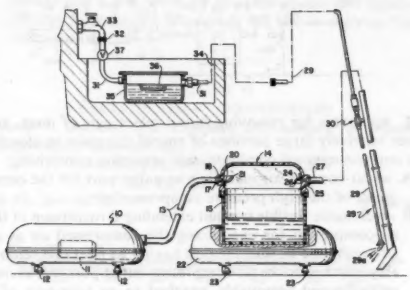
(k) and means including said connector end and first and second switch means for selectively, alternatively, operating the first or second motor-fan unit;

(l) whereby the second motor-fan unit is operated and the first motor-fan unit is disabled when the hose connector end is connected with the converter receptacle.

4,226,000
WET AND DRY VACUUM CLEANING SYSTEM

Herbert Tribolet, 2671 Paradise Way, Grand Junction, Colo. 81501

Continuation of Ser. No. 803,504, Jun. 6, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 14,666
Int. Cl.[3] A47L 7/00
U.S. Cl. 15—321 7 Claims



1. A hot water extraction system comprising a vacuum container;

a water tank for normally containing water up to a selective maximum operative water level therein under a vacuum condition and including a first hose interconnected to said vacuum container whereby a vacuum condition in the vacuum container provides a corresponding vacuum condition in the water tank;

a water extractor including a second hose interconnected to said water tank whereby a vacuum condition in said water tank provides a corresponding vacuum condition in said water extractor;

stationary flow direction controlling means stationarily fixedly disposed relative to the selective maximum operative water level in the water tank for preventing the water flowing into the water tank from the extractor up to such maximum water level under a vacuum condition from entering the vacuum container, said means being arranged relative to the extending disposition of such water level for controlling the flow direction of the vacuum induced flow into and through the water tank to travel substantially at inclined angles to such extending disposition of the water level;

a water applicator in proximity to said water extractor;

a line for the supply of water comprising a hose adapted to interconnect said water applicator to a conventional remote source of hot water supply; and

a valve for metering the amount of water supplied through said water applicator.

4,226,001
PIVOTAL JOINT WITH POSITION-STABILIZING SPRING

Luciano Salice, Carimate, Italy, assignor to Arturo Salice S.p.A., Cantu, Italy

Filed Mar. 23, 1979, Ser. No. 23,324
Claims priority, application Italy, Apr. 4, 1978, 21956 A/78
Int. Cl.[3] B14C 29/00
U.S. Cl. 16—145 6 Claims

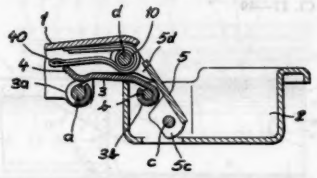
1. A pivotal joint for two relatively swingable components, comprising:

a first member adapted to be secured to one of said components;

a second member adapted to be secured to the other of said components;

an articulated linkage interconnecting said members, said linkage including a pair of hinge straps each having respective ends joined by pivot means to both said members, said pivot means including a pintle on said first member surrounded by a bushing of resilient material; and

a generally hairpin-shaped leaf spring with a first leg and a second leg interconnected by a bight portion closely embracing said bushing, said first leg bearing upon said first

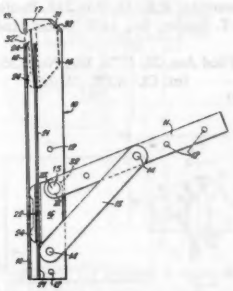


member, said second leg bearing upon a projection of one of said hinge straps for biasing said members into either of two relative positions, said leaf spring consisting of at least two nested and substantially coextensive steel plies of substantially the same thickness elastically reinforcing one another.

4,226,002
WINDOW OR THE LIKE STAYS

Ronald P. Davis, Wellington, New Zealand, assignor to Interlock Industries Limited, Wellington, New Zealand

Filed Oct. 2, 1978, Ser. No. 948,022
Claims priority, application New Zealand, Sep. 30, 1977, 185308; Nov. 23, 1977, 185769
Int. Cl.[2] E05F 3/22
U.S. Cl. 16—179 18 Claims



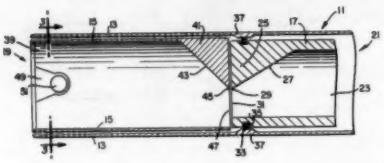
1. A window stay for adjustable mounting of a window sash into a window frame comprising a first mounting plate adapted for attachment to the frame of a window, a second mounting plate adapted for attachment to a sash of a window, a carriage slidably mounted on the first mounting plate, characterized in that an arm is pivoted at one end to the second mounting plate and at its other end to the first mounting plate, the second mounting plate being further pivoted, at a point remote from the pivot coupling the arm, to the carriage, abutment means provided with said first mounting plate and engagement means provided with said carriage and which cooperate with said abutment means during the initial opening and final closing operations of the stay to cause displacement of the carriage such that the pivot coupling the arm to the carriage is angularly displaced across the face of the first mounting plate.

4,226,003

LARGE CASINGS STUFFING PRODUCT STOPPERING MEANS

Vytautas Kupcikevicius, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 812,023, Jun. 30, 1977, Pat. No. 4,133,076.
This application Oct. 20, 1978, Ser. No. 953,109
Int. Cl.[2] A22C *11/02*
U.S. Cl. 17—49 4 Claims



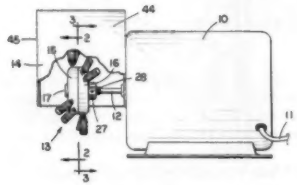
1. In a method for encasing viscous fluid product in continuous lengths of flexible tubular casing by forceably directing such product from a product supply source through a stuffing horn assembly and into such casing and wherein product flow is selectably stopped, the improvement of controllably selectively stopping said product flow at a location inwardly recessed from the product discharge end of the stuffing horn assembly a distance of at least twice the equivalent diameter of the discharge end of the stuffing horn assembly.

4,226,004

FISH SCALE REMOVER

Jessie G. Zimmerman, R.R. 15, Box 219, Bedford, Ind. 47421, and Robert T. Snider, Sr., 1439 Deloss, Indianapolis, Ind. 46201

Filed Jan. 25, 1979, Ser. No. 6,356
Int. Cl.[3] A22C *25/02*
U.S. Cl. 17—67 3 Claims



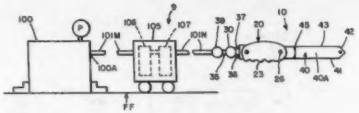
1. A device for removing scales from a fish comprising:
a rotatable shaft;
a plurality of helical springs with proximal ends mounted radially on said shaft and free distal end portions to engage and pull off scales on a fish as said shaft and springs are rotated and said springs are forced against the fish; and
means mounting said springs on said shaft and wherein said means includes a drum mounted to said shaft with an outer cylindrical wall upon which said proximal ends are mounted, said cylindrical wall being mounted to and extending axially along said shaft which extends therethrough, said drum includes mounting means extending between and securing said cylindrical wall to said shaft, said springs are pivotally mounted to said cylindrical wall.

4,226,005

APPARATUS AND TOOL FOR CUTTING ANIMAL CARCASSES BY IMPINGING AIR JETS

William G. Meyers, R.R. #1, Gretna, Nebr. 68028

Filed Apr. 20, 1979, Ser. No. 32,012
Int. Cl.[3] A22B *5/16;* A22C *17/04*
U.S. Cl. 17—1 R 10 Claims



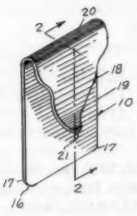
1. Apparatus for removing hides, select cuts of meat, and other relatively large portions of animal carcasses in cleanly-cut non-comminuted condition, said apparatus comprising:
A. an air-compressor including an outlet-port for the emergence of the high pressure compressed air;
B. an elongate flexible conduit extending downstream of the air-compressor for conducting the compressed air as an airstream, the flexible conduit having an inlet-end removably attached to the air-compressor outlet-port and having an outlet-end removably attached to an inlet-port of a portable workman's tool;
C. said workman's tool comprising;
i. a rearward handle wieldable by the workman;
ii. an elongate shank attached to and extending forwardly of the handle, said shank at its peripheral edge being provided with at least one orifice having an orifice-diameter not exceeding one millimeter;
iii. an airstream passageway extending from the inlet-port and at least partially extending along the shank interior and terminating at said at least one orifice, and
iv. a manually actuatable tool-valve accessible to the handle and for controlling the airflow rate along said airstream passageway;
D. filtering means located upstream of said workman's tool for filtering from the airstream solids having a particle size exceeding about one-half the orifice-diameter; and
E. desiccating means located upstream of said workman's tool for desiccating the airstream before it enters the tool inlet-port.

4,226,006

BILLFOLD SAFETY CLIP

James Toyama, 1980 Cedar Ave., Long Beach, Calif. 90806

Filed Jun. 22, 1978, Ser. No. 918,110
Int. Cl.[2] A44B *21/00*
U.S. Cl. 24—3 L 1 Claim



1. A safety clip for preventing the theft of billfolds by pickpockets comprising in combination:
a body portion of substantially planar rectangular configuration having curved bottom corners,
an arcuate top portion having substantially the same width as said body portion,
and a tapered portion integral with said arcuate portion

facing said body portion so that an air space between said tapered portion and said body portion exists below said arcuate portion defining a substantially bulbous air space when viewed in cross section which thereafter narrows, and said tapered portion terminates in an outwardly splayed free end just below said narrow, said free end defining a point and said tapered portion extending down from the arcuate portion whereby said body portion extends within a sleeve area of the billfold which is disposed within a person's pocket, said arcuate portion lies on a top lip of the pocket and a belt worn by the person and said tapered portion substantially snaps over the belt to provide firm retention therein.

4,226,007

SEALLESS STRAP CONNECTION

William F. Duenser, Mt. Prospect, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Mar. 16, 1979, Ser. No. 21,264
Int. Cl.³ B65D *63/02*
U.S. Cl. 24—20 EE **6 Claims**

1. A sealless strap connection between first and second overlapped lengths of strap which comprises an array of longitudinally spaced joints;

each joint comprising lengthwise opposed protuberances displaced from the respective planes of said overlapped lengths of strap and interlocked with each other;

said protuberances on said first length longitudinally spaced in a first and second group with the protuberances of the first group equally spaced from each other and with the spacing of the adjacent protuberances of the second group progressively increasing in the direction away from said first group;

said protuberances on said second length longitudinally spaced in a first and second group with the protuberances of the first group equally spaced from each other and with the spacing of the adjacent protuberances of the second group progressively increasing in the direction away from said first group; and

said first and second group of protuberances on said first length interlocked with said second and first group of protuberances, respectively, on said second length whereby when the connection is initially formed, protuberances intermediate the ends of the connection interlock before protuberances at the ends of the connection.

4,226,008

FASTENER FOR BANDS OR THE LIKE

Friedhelm Kramer, Ennepetal-Milspe, Fed. Rep. of Germany, assignor to Schaeffer-Homberg GmbH, Wuppertal, Fed. Rep. of Germany

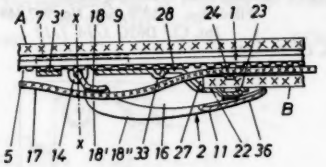
Filed Oct. 6, 1978, Ser. No. 949,049
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1977, 2745820
Int. Cl.² A44B *19/00;* **A41D** *1/06*
U.S. Cl. 24—206 B **8 Claims**

1. Fastener for bands or the like, particularly on pants, shirts, pockets or the like, comprising

a rail having catches defining catch recesses,

a slide running on said rail, said slide having a slide bottom plate defining a rail guide tunnel, said rail extending through said guide tunnel, said slide having a cover covering said rail guide tunnel,

an angular-shaped folding lever being pivotally mounted to said slide, said folding lever having a longer leg constituting lever actuation handle and a shorter angle leg, the latter carries a catch projection engaging in said catch recesses of said rail in a folded-up locked position of said folding lever, said longer leg of said folding lever having frame legs defining a window opening in said longer leg, the latter being adapted for the free passage therethrough of a cover strip, the latter lying on the outside in front of said rail, one of said frame legs points to said slide bottom plate and carriers said shorter angle leg, the latter via said



catch projection engaging in said catch recesses of said rail,

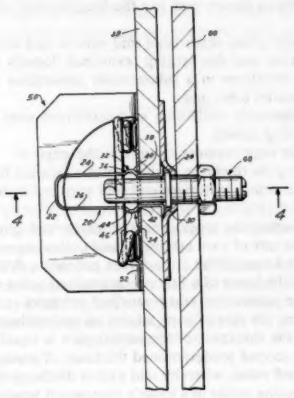
said one frame leg is angled-off such that in said locked position of said folding lever said one frame leg extends in a substantially parallel flat position relative to said cover of said rail guide tunnel and to the cover strip.

4,226,009

RECEPTACLE RETAINER

Peter Schenk, West Islip, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed Apr. 3, 1978, Ser. No. 892,900
Int. Cl.² A44B *17/00*
U.S. Cl. 24—221 R **11 Claims**



1. A receptacle retainer for holding a receptacle to one of two members to be fastened in position to be coupled with a stud mounted on the other of the two members to form a fastener for holding the two members together, the retainer comprising; means for engaging the surfaces surrounding an aperture in the one member so as to be fixed in position while permitting passage of a portion of the stud therethrough, a projecting leg portion of the retainer extending from the one member when the retainer is fixed in position on the one member and the projecting leg portion adapted to engage and hold the receptacle on the retainer and one member, the projecting leg portion holding the receptacle with limited free movement of the receptacle on the one member including axial and rotational movement so as to be retained in the proximity of the aperture therein and in position to be freely moved and rotated into fastened interengagement with the stud and fully seated against the one member free of interference with the retainer without the necessity of disengaging the retainer from the one

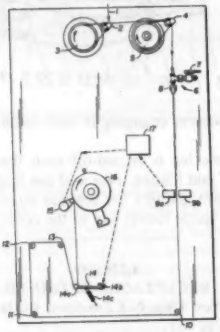
member when the stud and receptacle are coupled to hold the two members together.

4,226,010

PROCESS FOR BOUNCE CRIMP TEXTURIZING YARN

Philip C. Feffer, Silver Spring, Md., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 7, 1978, Ser. No. 967,449
Int. Cl.[2] D02G 1/16, 1/12
U.S. Cl. 28—248 **5 Claims**



1. In a process for the bounce crimp texturizing of thermoplastic yarn which comprises the steps of:
   (a) supplying drawn yarn to a fluidized bounce crimp texturizer;
   (b) bounce crimp texturizing said yarn in said bounce crimp texturizer and discharging texturized, loosely compacted yarn therefrom in a substantially tensionless state via a yarn outlet tube; and
   (c) continuously collecting said texturized yarn on a yarn collecting means,

wherein the improvement comprises the steps of:
   (a) sensing the thickness of the yarn at a location between the bounce crimp texturizer and said yarn collecting means; and
   (b) increasing the tension on said texturized crimped yarn and the rate of yarn takeup on said collecting means when the thickness of the sensed yarn exceeds a first predetermined thickness of a first predetermined value and reducing the tension on said texturized crimped yarn and decreasing the rate of yarn takeup on said collecting means when the thickness of the sensed yarn is equal to or less than a second predetermined thickness of a second predetermined value, whereby said yarn is discharged from said compacting outlet in a loosely compacted tensionless state and is not accumulated prior to being collected by said collecting means, thereby substantially reducing tangles.

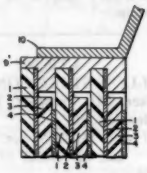
4,226,011

MANUFACTURING METHOD FOR METALIZED PLASTIC DIELECTRIC CAPACITORS FOR IMPROVED CURRENT CAPABILITIES

Delbert E. Hunt, Ogallala, Nebr., assignor to TRW Inc., Los Angeles, Calif.

Filed Jan. 2, 1979, Ser. No. 206
Int. Cl.[3] H01G 4/18, 1/14
U.S. Cl. 29—25.42 **11 Claims**

1. A method for manufacturing multi-layered capacitors, each layer consisting of a thermoplastic dielectric film and a conductive film associated therewith, different sets of conductive films being electrically connectable to separate lead electrodes, said method comprising:
   winding said layers into a coil, said layers being positioned with respect to one another so that at one axial end of said coil the conductive films of one set and the dielectric films associated therewith project axially beyond the edges of the remaining layers;
   initially heating said coil at a temperature below the rated operating temperature of said capacitor for a period of time sufficient to cause the initial contraction of said thermoplastic dielectric films;
   bonding a conductive bonding material to the axially extending conductive films at least at said one axial end of said coil, said bonding material penetrating between the axially



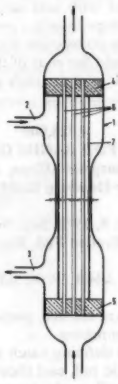
projecting layers so as to form an electrical connection with the conductive films of the projecting layers while not contacting the conductive films of the layers which do not project axially;
   subsequently heating said coil to above the rated operating temperature of said capacitor for a period of time sufficient to cause the dielectric films to contract into a mechanically rigid package without adversely affecting the electrical properties of the said dielectric films, said conductive films or said bonding material.

4,226,012

METHOD OF REPAIRING A HEAT EXCHANGER AND BODY FOR USE IN THIS METHOD

Jan Essebaggers, Nieuwerkerk aan de IJssel, Netherlands, assignor to B.V. Neratoom, The Hague, Netherlands

Continuation of Ser. No. 727,627, Sep. 8, 1976, abandoned. This application Sep. 27, 1978, Ser. No. 946,457
Claims priority, application Netherlands, Oct. 6, 1975, 7511726
Int. Cl.[3] B23P 9/00, 15/26
U.S. Cl. 29—157.3 R **2 Claims**



1. A method of repairing a heat exchanger having a housing defining an elongated enclosure in which a plurality of spaced apart tubes is arranged for passing a fluid, vapour or gas through the heat exchanger, and means for passing a hot medium through the enclosure surrounding the tubes so as to establish a heat exchange with the fluid, vapour or gas passed

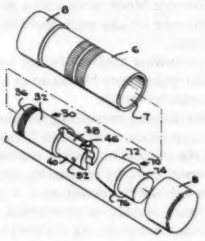
through the tubes, in the event of leakage of one of the tubes said method comprising the steps of sealing the defective tube at both ends to terminate the flow of said fluid, vapour or gas therethrough, cutting the defective tube through adjacent one of its ends, cutting the defective tube through at a corresponding place at the other end thereof, said steps of cutting being perfomed intermediate the sealed ends of said tube removing the thus severed tube section from the heat exchanger, and replacing said severed tube section by mounting a body in the heat exchanger having a structure so that during operation a proper mixing occurs between the hot medium flowing in the vicinity of the body and the hot medium flowing elsewhere in the enclosure surrounding the tubes, said body having means for creating nonlaminar flow of the hot medium along the body.

4,226,013

TOOL KIT FOR ATTACHING AND REMOVING SPIRAL LOCK WASHERS

Steven Helesfai, Nicholasville, Ky., assignor to Harry C. Miller and Georgia R. Miller, both of Merritt Island, Fla.

Filed Apr. 4, 1979, Ser. No. 26,952
Int. Cl.[3] A44B *13/02*
U.S. Cl. 29—235 **20 Claims**



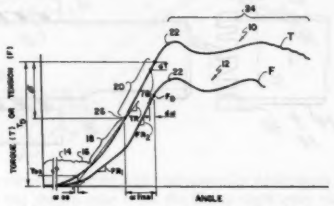
1. A tool for removing a spiral lock washer having upper and lower spiral flights from an annular washer retaining groove adjacent a free end of a supporting member having an axial opening in said free end and also having a cylindrical outer surface, said tool comprising an elongated body member having a guide end and a handle end, pivot means mounted in one end of said elongated body member extending transversely with respect thereto, a pivot lever mounted on said pivot means, said guide end of said elongated body member being dimensioned and shaped so as to be matingly insertable in said axial opening, a lift finger on an outer end of said pivot lever having an outer end tip positioned externally adjacent the guide end to be positionable in a space between the end tip of the upper spiral of the spiral lock washer positioned in an annular washer retaining groove of a supporting member when said guide end is inserted a predetermined distance in the associated axial opening of the supporting member whereby movement of said guide end inwardly of said axial opening beyond said predetermined distance effects pivotal movement of the lift finger to cause the end of the upper spiral to be lifted outwardly of the annular washer retaining groove to ride up on the lift finger to result in the positioning of the lift finger between the upper spiral flight and the lower spiral flight whereby subsequent rotation of the elongated body member about its longitudinal axis effects traversal of the lift finger along the entire length of space between the upper and lower spiral flights to a position below the lower flight to cause the spiral washer to be peeled off of the supporting member and completely removed from the annular groove and displaced outwardly of the free end of the supporting member.

4,226,014

TENSION CONTROL OF FASTENERS

Siavash Eshghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 912,151, Jun. 2, 1978, Pat. No. 4,179,786, which is a continuation-in-part of Ser. No. 712,554, Aug. 9, 1976, abandoned, and Ser. No. 766,429, Feb. 7, 1977, Pat. No. 4,106,570. This application Apr. 19, 1979, Ser. No. 31,346
Int. Cl.[3] B23P *19/06*
U.S. Cl. 29—407 **4 Claims**



1. Apparatus for monitoring the tightening of a joint having components including at least one threaded fastener, comprising

a powered tool for tightening the fastener;

means for sensing torque and not load at various angles of advance during tightening; and

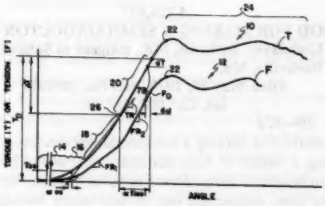
means for determining, from the sensed values, the stress appearing in the fastener at least at the termination of tightening at a stress value below the yield point of any joint component that can be correlated with stress.

4,226,015

TENSION CONTROL OF FASTENERS

Siavash Eshghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 912,151, Jun. 2, 1978, Pat. No. 4,179,786, which is a continuation-in-part of Ser. No. 766,429, Feb. 7, 1977, Pat. No. 4,106,570, and Ser. No. 712,554, Aug. 9, 1976, abandoned. This application Apr. 19, 1979, Ser. No. 31,356
Int. Cl.[3] B23P *19/06*
U.S. Cl. 29—407 **3 Claims**



1. A method of connecting a multiplicity of joints with threaded fastener pairs, comprising

tightening each fastener pair with a powered instructable tool to a stress value of at least 0.4 yield strength and below the yield point;

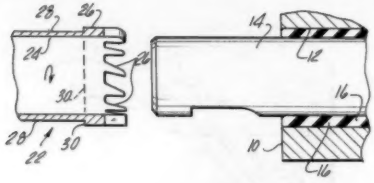
suspending tightening and allowing the joint to relax; and

resuming tightening to a final tightening parameter.

4,226,016
METHOD OF REMOVING A TRACK PIN FROM A TRACK SHOE

Nathaniel Carr, Detroit, Mich., assignor to The United States of America as represented by the secretary of the Army, Washington, D.C.

Filed Mar. 2, 1979, Ser. No. 16,776
Int. Cl.[3] B23P *19/04;* B25B *33/00*
U.S. Cl. 29—426.4 1 Claim



1. A method for removing a compressed rubber bushing from an annular space between a relatively large diameter smooth cylindrical bore extending through a track shoe and a relatively small diameter track pin extending through said bore; said method including the steps of providing an annular cutter element with an internal diameter as a sliding fit on the pin and an external diameter as a sliding fit on the bore surface so that the annular thickness of the cutter element is the same as the annular thickness of the compressed rubber bushing; providing a series of cutting teeth on an end edge of the annular cutter element; providing a reduction in the external diameter of the cutter element at a locality spaced a very slight axial distance from the cutting teeth to form an inwardly-directed shoulder at the outer side surface of the cutting teeth; rapidly rotating and simultaneously advancing the annular cutter element against the rubber bushing for a depth of approximately two inches to form rubber particulates at the teeth-rubber interface; withdrawing the cutter element out of the cylindrical bore to enable the aforementioned shoulder to remove particulates from the bore, and repeating the steps of advancing and withdrawing the rotating cutter element until the cutting teeth have advanced entirely through the bushing material.

4,226,017
METHOD FOR MAKING A SEMICONDUCTOR DEVICE

Joseph Lindmayer, Bethesda, Md., assignor to Solarex Corporation, Rockville, Md.

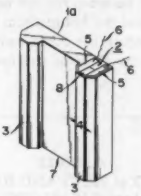
Filed May 15, 1978, Ser. No. 905,978
Int. Cl.[2] B01J *17/00*
U.S. Cl. 29—572 9 Claims

1. A method of making a semiconductor device, comprising providing a wafer of host material, said wafer having two major surfaces and being doped with an impurity of one conductivity type, contacting one of said major surfaces with a layer of a metal-containing composition without alloying or sintering, and then heating said wafer in the presence of an impurity of a second conductivity type to a temperature at which, at least said metal of said metal-containing composition diffuses into and thereby alloys with or sinters to said one major surface to form a high-low junction thereat, while said second conductivity type impurity substantially concurrently forms a p-n junction at the other of said major surfaces.

4,226,018
METHOD FOR MANUFACTURING A FLOATING TYPE THIN FILM MAGNETIC HEAD

Takuji Nakanishi; Tomoyuki Toshima, and Keiichi Yanagisawa, all of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Feb. 23, 1979, Ser. No. 14,718
Claims priority, application Japan, Feb. 27, 1978, 53-20901
Int. Cl.[3] G11B *5/42*
U.S. Cl. 29—603 12 Claims



1. A method for manufacturing a floating type thin film magnetic head which comprises the steps of:

(a) depositing a large number of thin film transducers in a matrix form on a lapped plain surface of a core block stock;

(b) cutting up the core block stock into a plurality of narrow parallelepiped core blocks each including a row of thin film transducers;

(c) lapping the recording medium-facing lateral plane of the narrow parallelepiped core blocks so as to prepare a slider surface of connected heads;

(d) covering the lapped recording medium-facing lateral plane of the core block with a thin film patterned mask;

(e) ion-etching the lapped recording medium-facing lateral plane of the core block by irradiating accelerated ions of argon gas through the patterned mask to provide air-bearing surfaces each having a prescribed width, the ion-etching step comprising placing the core block in a bell-jar of a sputtering apparatus, introducing argon gas thereinto which contains hydrogen gas having a partial pressure of about 1.6×10^{-3} Torr, placing a moisture holding material in the bell-jar to substantially fix the content of residual moisture in the bell-jar, and supplying radio frequency electric power to the sputtering apparatus;

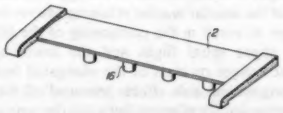
(f) removing the patterned mask from the core block by a corrosive liquid; and

(g) cutting up the processed core block into individual magnetic heads.

4,226,019
CLEANING MEMBER FOR TWO-EDGE SHAVING BLADE UNIT

Makoto Sugiyama, Seki, Japan, assignor to KAI Cutlery Center Co., Ltd., Gifu, Japan

Filed Jan. 26, 1979, Ser. No. 6,872
Claims priority, application Japan, Jan. 27, 1978, 53-7829
Int. Cl.[3] B26B *21/22*
U.S. Cl. 30—41 10 Claims



1. An ejecting member adapted to be interposed between two blade elements of a two-edge shaving blade unit and to be

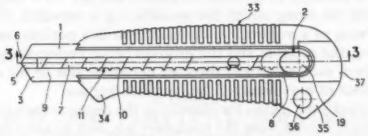
retractably moved forwardly to eject shaved hair particles and other matters deposited in and clogging the space between the cutting edges of said blade elements, the improvement wherein said ejecting member has an integral tabular construction including an outer frame portion which defines the outer profile of said ejecting member, an aperture which defines at its outer sides the inner edges of said outer frame portion, an inner island portion defined by the inner sides of said aperture and adapted to be fixedly cramped between said upper and lower blade elements, and at least one resilient bridge portion by which said inner island portion is resiliently connected to said outer frame portion, wherein said outer frame portion and said resilient bridge portion are thinner than said inner island portion.

4,226,020

KNIFE AND BLADE ADVANCE AND LOCKING MECHANISM THEREFOR

Michel C. Quenot, Ornans, and Louis Scandella, Marnay, both of France, assignors to Stanley Mabo S.A., France

Filed Feb. 1, 1979, Ser. No. 8,586
Claims priority, application France, Feb. 1, 1978, 78 03293
Int. Cl.[3] B26B *1/08*
U.S. Cl. 30—162 **9 Claims**



1. A knife comprising an elongated tubular blade-carrying sheath open at one end and having a longitudinally extending slot in the front wall thereof, a blade having a cutting edge on a longitudinal edge of the blade and being disposed within the sheath for relative longitudinal sliding movement, a combined sliding and locking member having means for releasably mounting one end of the blade with the cutting edge directed downwardly, the lower edge of the slot having a series of longitudinally spaced notches, a detent on said member selectively engageable with said notches for locking said member in adjusted position, said member having a biasing means for biasing the member downwardly to urge said detent into a notch, the detent being disengaged from a notch when the member is lifted upwardly against the bias of said biasing means.

4,226,021

SHAFT ASSEMBLY FOR LAWN TRIMMER

Stephen J. Hoff, Richmond, Ind., assignor to Hoffco, Inc., Richmond, Ind.

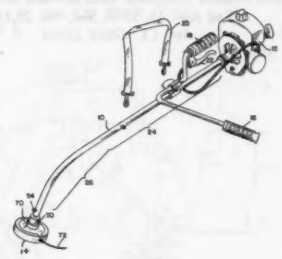
Continuation-in-part of Ser. No. 788,357, Apr. 18, 1977, Pat. No. 4,126,928, and Ser. No. 871,603, Jan. 23, 1978. This application Oct. 19, 1978, Ser. No. 952,715
Int. Cl.[3] A01D *35/26*
U.S. Cl. 30—276 **15 Claims**

1. A shaft assembly for physically connecting a driving head at one end to a driven tool at the other end and for housing a flexible drive shaft to drive the tool from the head, said assembly having a straight portion and a bent portion so as to dispose the axis of the tool end at an angle to the axis of the driving head, comprising

an outer frame shaft tube of relatively large diameter and structural strength extending continuously along said straight portion and said bent portion,

an inner sheath tube of relatively much smaller diameter formed of rigid but bendable tubing and extending substantially coaxially through the straight and bent portions of the frame shaft,

and bushing means interposed between the two tubes in closely interfitting relation with both and including an elongated, thick-walled continuous bushing of semirigid material extending over the length of the bent portion of the assembly and substantially filling the space between



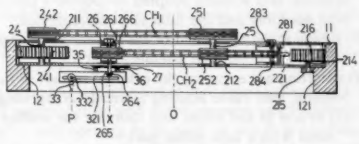
the tubes so as to provide substantially continuous support for the sheath tube from the frame shaft over such bent portion, and means in an adjoining straight portion of the assembly for holding the sheath tube coaxial with the frame tube.

4,226,022

ELLIPSOGRAPH

Jen-Sheng Chen, and Jen-Hung Chen, both of 4, Alley 17, Lane 73, Chang Tai St, Taipei 109, Taiwan

Filed Jul. 17, 1979, Ser. No. 58,302
Int. Cl.[3] B43L *11/04*
U.S. Cl. 33—30 G **6 Claims**



1. An ellipsograph comprising:

a ring gear having internal teeth;

a main seat bar disposed diametrically within said ring gear and being rotatable about the center of said ring gear;

a vertical shaft mounted on said seat bar;

an arm mounted on said shaft for rotation therewith;

a drawing implement adjustably mounted on said arm;

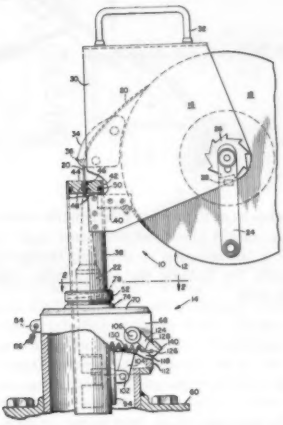
a drive gear mounted on one end of said seat bar and meshes with said inner teeth of said ring gear; and

chain drive means drivingly interconnecting said drive gear with said vertical shaft so that rotation of said main seat bar produces rotation of said drive gear which is transmitted to said vertical shaft for rotating said arm to produce an ellipse whose major axis equals twice the sum of a first value defined by the distance between the center of said ring gear and said vertical shaft and a second value defined by the distance between said vertical shaft and said drawing implement, and whose minor axis equals twice the difference between said first and second values.

4,226,023
PORTABLE DEVICE FOR DETERMINING PHYSICAL QUALITIES OF PRESSURIZED CONTAINER CONTENTS

William H. Gravert, Port Washington, N.Y., assignor to Marine Moisture Control Company, Inc., Inwood, N.Y.

Filed Apr. 11, 1979, Ser. No. 29,134
Int. Cl.[3] G01F *23/04*
U.S. Cl. 33—126.5 5 Claims

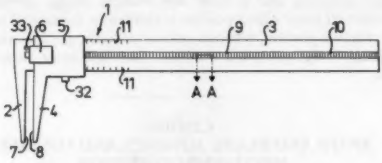


1. Apparatus for gauging liquid in pressurized tanks having at least one sealable outlet port comprising in combination a portable hand held measuring device and a valve housing assembly secured to the tank outlet port at each station to be gauged, said hand held measuring device comprising:
(a) a reel housing having a hand hold thereon;
(b) a fluid responsive device;
(c) a tape reel mechanism including a tape assembly having one end coupled with the fluid response device and the other end coupled with said tape reel mechanism;
(d) a second elongate hollow housing carried by the reel housing; said housing adapted to receive a portion of the tape assembly and the fluid responsive device;
(e) means at the upper end of the second housing providing a gas seal for the tape assembly; and
(f) a stuffing nut engaging the external surface of the second housing; said valve housing assembly comprising:
(1) means at the lower end therefor for sealing engagement with a tank outlet port;
(2) an externally threaded neck at the opposite end of the valve housing sized to be engaged by the stuffing nut carried by the second housing;
(3) an axial bore through the externally threaded neck, said axial bore having a diameter to freely receive said second elongate hollow housing;
(4) a sealing means mounted in the axial bore of the threaded neck and adapted to sealingly engage the external surface of the said second elongate housing when said housing is inserted through the neck:
(5) a valve seat at the inner end of the said neck;
(6) a valve cap;
(7) means pivotally mounting the valve cap within the valve housing; and
(8) spring means urging the valve cap into sealing engagement with the valve seat, said valve cap being displaceable to a position to permit entry of a portion of the second housing into the valve housing against the urging of said spring by the inward movement of the second elongate housing.

4,226,024
CALIPER

Gerhard Westerberg, Taby, and Hans Jacobsen, Solna, both of Sweden, assignors to Gerhard Westerberg, Taby, Sweden

Filed Jan. 24, 1979, Ser. No. 5,976
Claims priority, application Sweden, Jan. 30, 1978, 7801122
Int. Cl.[3] G01B *3/20, 7/02*
U.S. Cl. 33—143 L 6 Claims



1. A caliper for measuring the diameter of tree stems comprising:
(1) a stationary leg fixed with a bar having a length and a movable leg slidably mounted on said bar by a support member and movable along the length thereof in two opposite directions;
(2) a plurality of grooves located in the bar for a length of the bar along which the movable leg is movable, the bar being of a magnetic material at least in a portion containing the grooves and the grooves being uniformly spaced from each other and directed perpendicular to the directions of movement of the movable leg; and
(3) electronic means for measuring the distance the movable leg is moved from the stationary leg, said means comprising:
(a) two field plates rigidly attached to the support member of the movable leg adjacent said grooves, each field plate magnetically sensing each groove and producing an electrical signal in response thereto, the plates being located relative to each other so that the electrical signals produced thereby in response to the sensed grooves are out of phase from each other, and the phase difference between the produced electrical signals indicating the direction of movement of the movable leg relative to the stationary leg;
(b) means for converting said electrical signals from the field plates to pulses substantially in phase with said electrical signals;
(c) comparison and scaling means for comparing the phase relationship of the pulses to determine the direction of travel of the movable leg along the bar and for counting the number of pulses to determine the distance the movable leg is moved from the stationary leg;
(d) converter means for converting the number of pulses to readable measurement values; and
(e) portable data terminal means for storing the measurement values.

4,226,025
SURGICAL CALIPER

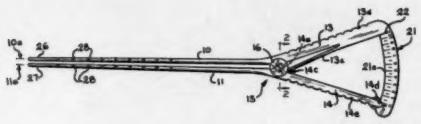
Michael R. Wheeler, 1720 Andres Ave., Torrance, Calif. 90501

Filed Mar. 5, 1979, Ser. No. 17,400
Int. Cl.[3] G01B *5/02*
U.S. Cl. 33—148 E 12 Claims

1. A measuring caliper adapted for measuring anatomical parts of mammals during surgery without damaging the parts particularly inside a body cavity;
(a) a pair of long straight arms with longitudinal axes which are approximately parallel in a closed position of the arms each arm having a distal end and an opposite end connected to a handle which is provided by extensions of each of the arms, the arms each having a series of parallel precisely positioned reflecting means along the longitudinal axis near the distal end of the arms which can reflect

light when the arms are positioned inside a body cavity for measuring;

(b) pivot means providing a pivot point between the arms and handles and joining the arms together such that the arms can open from the closed position for measuring and close in a scissors movement; and



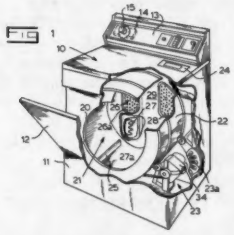
(c) a scale with index marks as part of the handle which is attached to one of the extensions of the arms such that the other arm extension is moveable across the scale for measuring as the arms are opened or closed in a scissors movement.

4,226,026

DUAL ENERGY INPUT CYCLE FOR A DRYER

Charles P. Deming, Watervliet Township, Berrien County; Norbert J. Rybarczyk, Jr., Lincoln Township, Berrien County, and Alvin E. Burkall, Coloma Township, Berrien County, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 16, 1979, Ser. No. 21,079
Int. Cl.[3] F26B *21/10, 3/04*
U.S. Cl. 34—31 **10 Claims**



1. In a dryer having a means for directing a flow of air for drying a clothes load over a period of time during a preselected programmed cycle of operation, and a heater for raising the temperature of said air, a control means for said heater comprising:

a first means for providing a low thermal output from said heater during a first portion of said cycle of operation;

a second means for providing a high thermal output at a level sufficient to de-wrinkle permanent press fabrics from said heater for a second portion of said cycle of operation; and

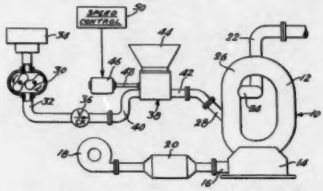
a third means for automatically changing sequentially from said low to said high thermal output with no intervening decrease in thermal output at a selected time during said cycle of operation so that a relatively higher energy input occurs near the end of the cycle to enhance de-wrinkling of permanent presstype fabrics.

4,226,027

MATERIAL FEED SYSTEM FOR JET MILLS AND FLASH DRYERS

James F. Albus, Newtown, Pa., assignor to Aljet Equipment Company, Willow Grove, Pa.

Filed Mar. 27, 1979, Ser. No. 24,249
Int. Cl.[3] F26B *17/00*
U.S. Cl. 34—57 R **2 Claims**



1. In a jet mill or flash dryer comprising a first conduit, means producing a high-velocity flow of gas in said first conduit for effecting treatment of solid particles therein and an opening in the wall of said first conduit for the introduction of solid matter to be treated, a material feed system comprising:

blower means for producing a flow of air under a pressure higher than the pressure at said opening resulting from the flow of gas in said first conduit;

means providing a second conduit connected at one of its ends to said blower means to receive air therefrom;

feeder means for introducing solid material to be treated into said first conduit through said opening, said feeder means comprising means providing a chamber, means providing an air inlet opening in said chamber connected to the other end of said second conduit, means providing a material inlet opening for introducing solid material into said chamber, and means providing an outlet opening, air-locked conveying means for conveying solid material to be treated into said chamber and preventing continuous flow of air from said air inlet opening outwardly from said chamber through said material inlet opening, said air-locked conveying means comprising a series of movable blades and means for moving said blades to effect movement of solid material into said chamber, said blades being positioned so that, through at least part of its travel, at least a portion of each blade is located in the path of flow of air between said air inlet opening and said outlet opening; and

means providing a third conduit connected to receive air and solid material from said outlet opening and to deliver the same to said opening in the wall of said first conduit;

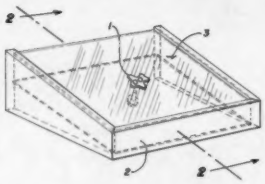
in which said means comprising a series of blades is a rotary valve having a rotatable shaft, and in which said chamber is bounded in part by a pair of end walls, and a side wall in the form of a surface of revolution coaxial with said shaft and extending between said end walls, said blades being secured to and extending radially outwardly from said shaft and substantially conforming to said end walls and to said surface of revolution, thereby forming a series of movable chambers within said chamber, and in which said air inlet opening is in one of said end walls, said outlet opening is in the other of said end walls, and said material inlet opening is formed by a gap in said side wall, and said blades are sufficient in number to prevent direct communication between said material inlet opening and said air inlet opening and between said material inlet opening and said outlet opening regardless of the position of said rotatable shaft, and in which said air inlet opening and said air outlet opening are positioned in said opposite end walls for continuous communication between them through said movable chambers.

4,226,028

NDB INSTRUMENT FLIGHT TRAINER

David P. Robson, 4602 Schenley Rd., Baltimore, Md. 21210

Filed Jul. 10, 1978, Ser. No. 923,201
Int. Cl.[3] G09B 9/08
U.S. Cl. 35—10.26 4 Claims



1. Apparatus for visually demonstrating NDB instrument navigational techniques, comprising:

a planar table having a first playing surface inclined with respect to the horizontal, and an opposing second surface;

first magnetic means selectively positionable adjacent to said second surface of said table, opposite said first surface;

a manually movable model airplane having a nose and an opposing tail and engageable with said first surface of said table, said model airplane including a facsimile automatic direction finder relative bearing indicator responsive to said first magnetic means, said facsimile relative bearing indicator including an annular azimuth scale with degree markings equally spaced around the periphery thereof from zero degrees to 360 degrees, the zero marking adjacent said nose of said model airplane,

a pointer positioned within the central opening of said azimuth scale, said pointer rotatable about an axis vertical to said model airplane,

said pointer further includes a second magnetic means fixed thereto so that said pointer is rotated and directed toward first magnetic means, and

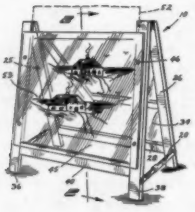
a facsimile gyro compass containing a compass card with direction markings thereon including north, south, east and west at the proper 90 degree relationships, said compass card mounted to an axis vertical to said model airplane and freely rotatable through 360 degrees.

4,226,029

REFLECTIVE TRACING DEVICE

Kevin C. McGuire, Sauk Rapids, Minn., assignor to Arthur M. Gunderson, St. Cloud, Minn.

Filed Feb. 9, 1979, Ser. No. 10,707
Int. Cl.[3] G09B 11/06
U.S. Cl. 35—26 5 Claims



1. A perceptual educational tracing apparatus, having in combination

a transparent panel member,

a transparent sheet member bearing indicia,

means removably holding said transparent sheet member to underlay said transparent panel member,

a panel member having a mirrored surface, and

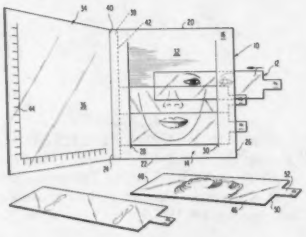
means adjustably securing said first and second mentioned panel members relative to each other for reflection of said indicia upon said mirrored surface, whereby there is direct observation of the hand of the operator in tracing said indicia and an observation of said hand as a mirrored image for perceptual guidance of said hand in tracing said indicia as seen upon said mirrored surface.

4,226,030

SUBJECT IDENTIFICATION SYSTEM WITH OVERLIE COVER

William T. Quinn, III, 681 Park Ave., Freehold, N.J. 07728

Filed Sep. 18, 1978, Ser. No. 943,428
Int. Cl.[3] G09B 1/04
U.S. Cl. 35—28 4 Claims



1. In a facial identification system in which a composite of facial features interrelated to form a representation of a subject, the composite being made up of changeable individual feature component segments which partially overlap one another in irregular, layered fashion, the combination of a holder for said segments, and the segments, comprising:

a back member comprising a substantially rectangular panel of opaque, flexible material having opposite front and rear faces, top and bottom edges, and inner and outer side edges;

the panel having a pair of vertically extending slots formed therein in substantially parallel relation to the side edges and spaced inwardly therefrom;

the slots terminating at locations spaced from the top and bottom edges;

the slots defining a backing panel therebetween;

a cover member formed of transparent flexible plastic and including a cover panel and fold tab;

the cover panel and the fold tab being hingedly joined together along a fold line;

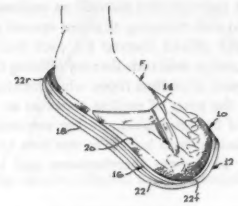
the fold tab being fixedly secured to the rear face of the back member and having a terminal side edge located in parallel, inwardly spaced relations to the inner side edge of the back member;

the cover panel being dimensioned to overlie the back member;

the segments being elongated and having inside edges and having outside edges;

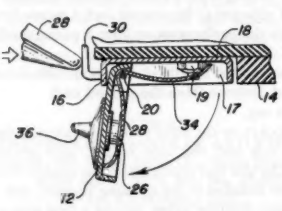
the segments being inserted through the slots to overlie the backing panel with the inside edges abutting the terminal side edge of the fold tab, and having pull tabs on the outside edges thereof, said pull tabs projecting outwardly of the backing panel when the inside edges abut the terminal side edge of the fold tab.

4,226,031
SANDAL
James K. Wong, 46-194 Nona Loop, Kaneohe, Hi. 96744
Filed Jun. 19, 1978, Ser. No. 916,463
Int. Cl.[3] A43B *3/12*
U.S. Cl. 36—11.5 1 Claim



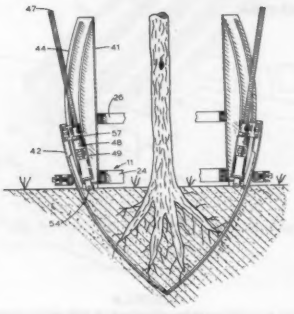
1. A decorative sandal, comprising:
a base; and
strap means for holding a foot to the base;
said base including an upper base portion, a stripe layer lying generally against the bottom of the upper base portion, and a tough sole layer lying against the bottom of the stripe layer;
said upper base portion being tapered in thickness, so it is progressively thinner at progressively more forward locations, and the stripe and sole layers extending at an upward-forward incline near the front of the base;
the extreme front edge of said base being angled from the vertical so it extends perpendicular to the front end of the stripe layer, as seen in a side elevation view, whereby to keep the thickness of the stripe layer uniform at the front and sides of the sandal.

4,226,032
GOLF SHOE
Richard E. Herro, 1472 Pioneer Rd., Joliet, Ill. 60435
Filed Oct. 19, 1978, Ser. No. 952,811
Int. Cl.[2] A43B *5/00*; A43C *15/00*; A63B *55/00*
U.S. Cl. 36—127 9 Claims



1. A golf shoe which comprises: a plate; hinge means connecting said plate to the outer edge of the golfer's back shoe; means for retaining said plate in a first position wherein said plate lies flat against the shoe sole; and means for holding said plate in a second position wherein said plate is angled with respect to the shoe sole to thereby tilt the shoe inwardly when worn by the golfer while said plate is in the second position, said means for retaining said plate in the first position including a fastener which is operable when the golfer moves the plate from the second position to the first position by applying a normal force to the outside face of said plate by sliding the shoe generally laterally outward and then lowering the shoe keeping the shoe sole substantially parallel with the ground until the cleats on the shoe sole are in contact with the ground.

4,226,033
TREE TRANSPLANTING MACHINE
John M. DeHaan, Pella, Iowa, assignor to Vermeer Manufacturing Co., Pella, Iowa
Filed Jun. 1, 1979, Ser. No. 44,530
Int. Cl.[3] A01G *23/06*
U.S. Cl. 37—2 R 6 Claims



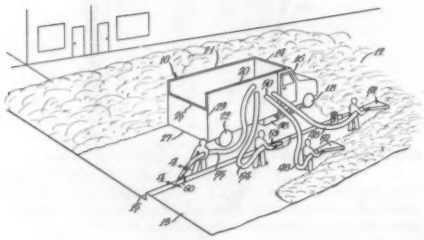
1. A machine for excavating a tree from the ground with a root ball including:
(a) a base frame for encircling a tree to be excavated;
(b) a plurality of upright blade guide units on said base frame;
(c) a plurality of movable digging blades corresponding in number to said guide units, with each blade movable in a guided path adjacent to and outwardly from an associated guide unit;
(d) means for guidably supporting a blade for movement in said guided path from an upper position out of the ground, to a lower ground inserted position wherein said blades are inclined downwardly and inwardly of said base frame to form a tree ball for the roots of a tree being excavated;
(e) means for moving each blade in the guided path therefor including an upright lift screw and coacting nut assembly, located within each guide unit;
(f) means supporting the lower end portion of said lift screw on the base frame for rotational movement about an upright axis and for pivotal movement in a plane laterally of a blade;
(g) means for connecting each nut assembly to the upper end portion of an associated blade;
(h) coacting means on a guide unit and nut assembly for defining said guided path of movement of a blade; and
(i) means for reversibly rotating said lift screw.

4,226,034
VACUUM SNOW REMOVER FOR REMOVING SNOW FROM ROADS AND OTHER SNOW COVERED SURFACES
Irving Benjamin, and Diana M. Benjamin, both of 7539 E. Prairie Rd., Skokie, Ill. 60076
Filed Nov. 6, 1978, Ser. No. 957,734
Int. Cl.[3] E01H *5/10*
U.S. Cl. 37—12 13 Claims

1. A vacuum snow remover for removing snow from a snow covered road and the like, comprising:
a wheeled motorized vehicle for driving upon a snow covered road having a cab at its front end and a snow-receiving collection tank at its rear end;
a main intake conduit communicating with said snow-receiving collection tank and extending to a position adjacent said snow covered road, said intake conduit being located and spaced rearwardly of said cab;
pneumatic snow removing means including fan means operatively associated with said snow-receiving collection

tank for creating a suction less than atmospheric pressure to effectively draw snow upwardly from said snow covered road through said main intake conduit and into said snow-receiving collection tank as said vehicle is stopped and while said vehicle is moving;

said snow-receiving collection tank having a melting chamber with melting means for melting said snow and defining a basin below said melting chamber for receiving said melted snow;



discharge means communicating with said basin for discharging said melted snow from said collection tank; and

at least one auxiliary inlet conduit for drawing in snow from locations adjacent said road, said auxiliary inlet conduit having one end operatively connected to said fan means and communicating with said snow-receiving collection tank and another end defining a manually graspable intake portion adapted to be manually moved to said locations adjacent said road.

4,226,035

APPARATUS FOR CONTINUOUSLY DREDGING SUBMARINE MINERAL DEPOSIT

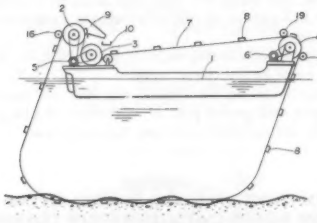
Nakaji Saito, 6-3, Higashi Jujyo, Kitaku, Tokyo, Japan

Filed Jan. 21, 1978, Ser. No. 871,197

Claims priority, application Japan, Oct. 25, 1977, 52/127755

Int. Cl.[3] E02F 3/08, 3/14

U.S. Cl. 37—69 **2 Claims**



1. An apparatus for continuously dredging submarine mineral deposits comprising:

an endless rope for circulating over the upper deck of a barge and along the seabed;

buckets fixed to the endless rope to effect scraping-up the mineral deposit from the seabed;

pulleys to engage and drive the endless rope and to be mounted on the barge;

the endless rope including spaced parallel pairs of endless ropes each of which is capable of traveling in translational motion;

said pulleys including a plurality of component pulleys rotatably mounted coaxially at a preset distance;

each of said buckets being interposed between spaced pairs of endless ropes and affixed thereto and being adapted to travel between said component pulleys when each bucket is disposed at the location where the endless ropes are in contact with and driven by a plurality of said component pulleys;

clamping means including a metal pipe open at both ends for each endless rope, the endless rope mounted in both open ends of the metal pipe, adhesive within the pipe securing the rope therein, and caulking on the outer peripheral surface of the pipe to thereby fasten securely the pie to both ends of the rope and provide an endless rope;

a pair of spaced rods bridging adjacent spaced pairs of endless ropes and affixed thereto for each bucket and the bucket mounted to said rods thereby affixing the bucket to the spaced pairs of endless ropes while locating the buckets between the pairs of endless ropes so as to minimize adjustment of bucket position during use; and

means for mounting each bucket to the rods to permit limited relative movement therebetween and lessen shock during use.

4,226,036

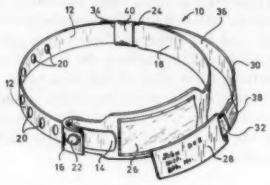
BRACELET ASSEMBLY FOR IDENTIFICATION DEVICE

Albert E. Krug, Wyckoff, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Dec. 18, 1978, Ser. No. 970,148

Int. Cl.[3] G09F 3/14

U.S. Cl. 40—21 C **7 Claims**



1. A bracelet assembly for carrying an identity tag used to transfer identity information to a business record, which comprises;

(a) an elongate, flexible, band of a synthetic, polymeric resin, said band having a first end, a second end and a band body joining the first and second ends;

said body having a perforation therein adjacent the first end and adjacent to the second end, a means for association with the perforation to form a permanently closed loop of the band;

a stop means on the band body at a point which is a predetermined distance from the second end;

an identity tag;

an open pocket on the band body, positioned between the second end and the stop means, said pocket being adapted by size and configuration to receive the identity tag when inserted in the opening thereof; and

(b) an elongate, flexible tether having a first end, a second end and a tether body joining the first and second end of the tether;

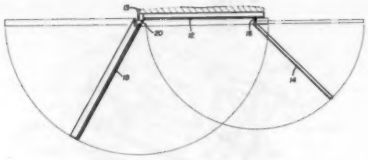
means at the first tether end for permanently attaching to the identity tag;

means at the second tether end for slidingly mounting the tether on the band body, between the first end of the band and the stop means, said means at the second tether end being stopped by said stop means from sliding between the stop means and the second end of the band, in a direction toward the second end of the band before the permanently closed loop is formed;

said tether being slidingly mounted on the band through the means for the sliding mount;

said tether body having a length less than the aforementioned predetermined distance.

4,226,037
WALL DISPLAY DEVICE
Robert Rodriguez, 8515 Gilman, Westland, Mich. 48185
Filed Jan. 2, 1979, Ser. No. 137
Int. Cl.³ G09F *1/12*
U.S. Cl. 40—152.1 **3 Claims**



1. A display device adapted to be mounted on a wall comprising:

a first section of generally flat, rectangular shape and adapted to be mounted substantially flush against the wall, said first section having a generally flat rectangular recess covering substantially all of the front face thereof, said recess being faced with a first display surface;

a second section of generally flat rectangular shape and dimensioned along its height and width to freely nest into said recess of said first section, said second section being mounted to said first section by a first hinge means near a first vertical edge of said first section, said hinge means permitting said second section to be pivotally swung outward about 180° from its nested position to an open position substantially parallel to the plane of said first section, said second section having second and third display surfaces on opposite faces thereof, said second display surface facing outwardly away from the wall when said second section is in its nested position and said third display surface facing outwardly away from the wall when said second section is swung to its open position;

a third section of generally flat rectangular shape having on one face a generally flat, rectangular recess which is faced with a fourth display surface and having on its opposite face a fifth display surface, said third section being mounted to said first section by second hinge means near the second vertical edge of said first section, said third section and said recess therein being dimensioned to completely cover and obscure said first and said second sections when said third section is in a closed position, with said recess receiving at least a portion of the depth of said first and second sections, and said second hinge means permitting said third section to be swung outward about 180° from said closed position to an open position substantially parallel to the plane of said first section.

4,226,038
PHOTO-SLIDE HANDLER AND VIEWER
John Ashworth, 101 Valley Oaks Dr., Santa Rosa, Calif. 95405
Filed Apr. 2, 1979, Ser. No. 25,983
Int. Cl.³ G02B *27/02*
U.S. Cl. 40—361 **10 Claims**

1. A device for displaying photo-slide comprising:

a panel;

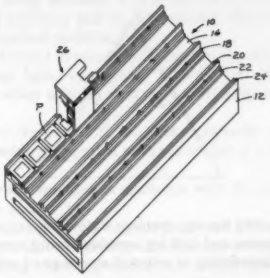
upper and lower rails on the panel;

the upper and lower rails are parallel and are spaced to support the tops and bottoms of the flat, back surfaces of photo-slides;

a slide handler box for receiving a stack of photo-slides and having side walls, back wall, and a bottom support spaced from said side walls;

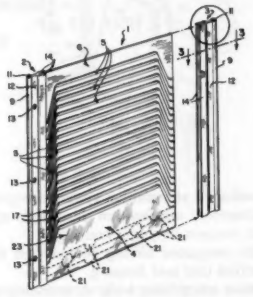
slide surfaces, at the lower edges of said side walls, to slide along said panel astride said upper and lower rails with a stack of photo-slides supported in said handler box; and

pick-off teeth, each with a stop surface of a height slightly less than the thickness of a photo-slide, along one of said upper and lower rails, said teeth being spaced slightly more than the width of a photo-slide so that, as said box is moved along said upper and lower rails, a photo-slide is



picked off by each of said teeth and deposited on said upper and lower rails.

4,226,039
MULTI-POCKETED HOLDER FOR FILM AND CARD STORAGE
Raymond R. Young, Glenview, Ill., assignor to Wilson Jones Company, Chicago, Ill.
Filed Aug. 2, 1978, Ser. No. 930,367
Int. Cl.³ G09F *1/10*
U.S. Cl. 40—373 **6 Claims**



1. A film and card holder comprising

(a) two spaced-apart frame pieces which include panel receiving portions;

(b) a first and a second pocket panel each of which in turn comprises

(i) two opposing walls attached along a base crease;

(ii) at least one spacer tab unitary with the panel and depending below the base crease; and

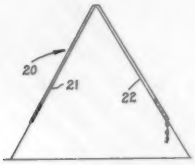
(iii) end portions positioned in said panel receiving portions; and

(c) the first pocket panel being nested in the second pocket panel with the spacer tab of the first panel abutting the base crease of the second panel.

4,226,040
FOLDING SCAFFOLD SIGN
Michael A. Carroll, and John L. Carroll, both of St. Louis, Mo., assignors to R & J Sign Company, Inc., St. Louis, Mo.
Filed Jun. 29, 1979, Ser. No. 53,281
Int. Cl.³ G09F *15/00*
U.S. Cl. 40—610 **7 Claims**

1. A weather resistant plastic folding scaffold sign comprised

of a pair of panels connected together by a fold means, leg members connected to each of said panels extending away from said fold means, said panels being comprised of a honeycomb structure having openings extending perpendicularly to said fold means and said leg members being connected to said panels by interfitting in selected openings of said honeycomb structure.

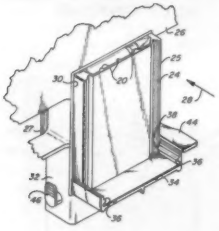


4,226,041

PREPACKAGED AMMUNITION SYSTEM

William H. Goodworth, 3112 Carey Ave., Davenport, Iowa 52803

Filed Jul. 3, 1978, Ser. No. 921,390
Int. Cl.³ F41C *25/02*
U.S. Cl. 42—50 **9 Claims**



1. A prepackaged ammunition system comprising a weapon having a chamber, ammunition feed lips and a follower thereon, said weapon having a housing,

a disposable magazine having ammunition therein adapted for insertion into said housing,

said magazine comprising walls surrounding a vertical stack of cartridges,

said housing having said follower vertically moveable therein and latch means for retaining said follower in a downward position until after insertion of said magazine,

said housing having detent means thereon to permit unidirectional insertion and removal of said magazine therefrom.

4,226,042

ANIMAL TRAP STAKE

James K. Gilbert, R.R. 6, Box 493, Connersville, Ind. 47331

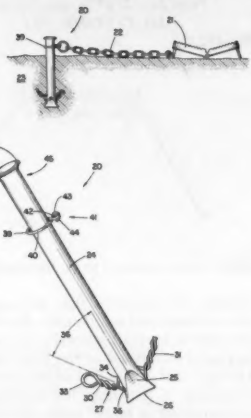
Filed Dec. 11, 1978, Ser. No. 968,368
Int. Cl.³ A01M *23/24*
U.S. Cl. 43—96 **3 Claims**

1. An animal trap stake for anchoring an animal trap into the ground, said animal trap stake comprising:

a length of hollow pipe having an outwardly flared enlarged portion at a first end and a flattened blade portion at the opposite end;

a "figure 8" swivel member having a first larger loop and a second smaller loop, said first larger loop being slidably received around said length of hollow pipe; and

two oppositely disposed anchoring arms secured to said length of hollow pipe adjacent said flattened blade portion and defining an acute included angle with the longitudinal axis of said length of hollow pipe, said flattened blade



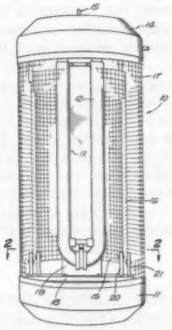
portion and said two oppositely disposed anchoring arms being substantially centered in the same geometric plane.

4,226,043

INSECT KILLING APPARATUS

Dean Peterson, Antioch, Ill., assignor to Beatrice Foods Co., Bristol, Wis.

Filed Feb. 2, 1979, Ser. No. 8,936
Int. Cl.³ A01M *1/04*
U.S. Cl. 43—112 **3 Claims**



1. In an electrical apparatus for killing insects having means for attracting the insects, first vertically extending mesh electrode means surrounding the atrracting means, second vertically extending mesh electrode means in spaced surrounding relationship to said first electrode means, a top and a bottom, the improvement comprising:

a first pair of insulators affixed to the inwardly facing surface of the first electrode means edge margin and the bottom; and

a second pair of insulators affixed to the outwardly facing surface of the second electrode means edge margin and the bottom;

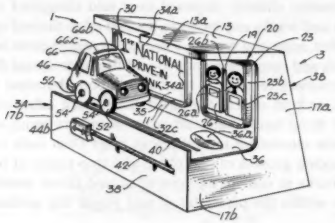
said first and second pairs of insulators being located outwardly of the space between the electrode means leaving said space therebetween free of all obstruction by said insulators.

4,226,044

DRIVE-IN TELLER COIN BANK

Ulrich H. Thomas, Bellwood, Ill., assignor to Banthrico Inc., Chicago, Ill.

Filed Dec. 11, 1978, Ser. No. 968,510
Int. Cl.³ A63H *33/00*
U.S. Cl. 46—4 **15 Claims**



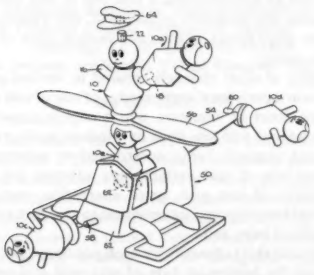
1. A coin bank comprising: a coin bank housing including a front support base and a rear portion defining a coin storage compartment behind said support base, said rear portion including a forwardly facing vertical wall extending along and mounted for movement along the top of said front support base in a direction parallel to the front of the coin bank and from a coin-receiving position adjacent one end portion thereof to a coin-ejecting position adjacent the opposite end portion thereof, said vehicle having a coin-receiving means to receive a coin when the vehicle is in said coin-receiving position and a coin-receiving slot oriented to receive a coin held in a vertical plane extending transversely to the direction of movement of said vehicle over said support base through which slot the coin drops onto said coin-receiving means, a coin-receiving opening in said vertical wall in the form of a vertical slot at the rear of said support base and positioned to receive a coin ejected from said vehicle when in said coin-ejecting position; and means responsive to the movement of said vehicle to said coin-ejecting position for imparting movement to said coin-receiving means therein to eject the coin from the side of the vehicle facing said vertical wall into said coin-receiving opening therein where the coin falls into said coin storage compartment.

4,226,045

STACKABLE TOY

Roger W. Lehmann, Belle Mead, and Vincent F. Siravo, New Monmouth, both of N.J., assignors to Knickerbocker Toy Co., Inc., Middlesex, N.J.

Filed Mar. 22, 1979, Ser. No. 23,020
Int. Cl.³ A63H *33/08*
U.S. Cl. 46—25 **7 Claims**



1. A stackable toy, comprising:

(a) a doll,
(b) a pin mounted in said doll for longitudinal movement relative to the doll,
(c) said pin being movable in one direction to outwardly projecting positiion and in the opposite direction to inwardly retracted position,
(d) a socket formed in said doll in registration with said pin,
(e) said socket being engageable with the pin of a second such doll when said pin is in outwardly projecting position,
(f) the pin of the first doll, when in outwardly projecting position, being engageable with the socket of a third such doll,
(g) whereby the first doll is stackable with the second and third such dolls,
(h) said doll comprising a body, a head and a base,
(i) said body and head having a continuous passage formed therein along the longitudinal axis of the doll and said passage being open at the top of said head,
(j) said pin being mounted within said passage and being longitudinally movable therein between retracted and outwardly projecting positions relative to the doll,
(k) means for moving the pin into retracted and projecting positions,
(l) said projecting and retracting means comprising a helical cam and cam follower means between the doll and the pin.

4,226,046

FIGURINE CAPABLE OF GRIPPING A SUPPORT

René Delhome, Les Chassis, 26600 La Roche de Glun, France

Filed Apr. 17, 1978, Ser. No. 897,185
Claims priority, application France, Apr. 20, 1977, 77 11933; Jan. 25, 1978, 78 02085
Int. Cl.² A63H *3/04*
U.S. Cl. 46—123 **12 Claims**

1. A toy figurine comprising a body having at least one pair of enclosing shaped limbs joined thereto and projecting outwardly therefrom in close relation to each other, and means adapted, upon manipulation of said means, to move said limbs apart and return same close to one another in order for them to cling to a support and maintain the figurine thereon, characterized in that it comprises no hard armature, in that said means adapted to return the limbs close to one another consist essentially of a portion integral with the figurine body made of resilient compressible material, and in that this integral resilient portion is connected to said limbs.

4,226,047

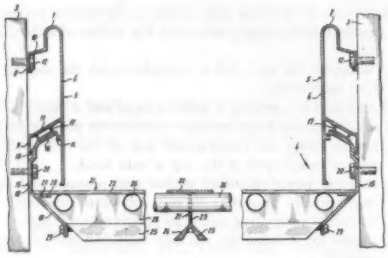
RACKS FOR THE CULTIVATION OF MUSHROOMS AND SIMILAR FUNGI

Ludoricus C. Maaijwee, Waalwijk, Netherlands, assignor to Alcoa Nederland B.V., Drunen, Netherlands

Filed Jan. 5, 1979, Ser. No. 1,374
Claims priority, application Netherlands, Jan. 6, 1978, 7800190
Int. Cl.³ A01G *1/04*
U.S. Cl. 47—1.1 **7 Claims**

1. Rack for the cultivation of mushrooms and similar fungi, comprising vertical girders which have been mounted in two parallel planes, and troughs for the cultivation of the mush-

rooms, said troughs being superimposed horizontally and fixed between said girders and each one of said troughs comprising a bottom and side slats, characterized in that the side slats consist of extruded aluminum profiles to be secured to the inner sides of the girders and an upper edge lying at a distance from said girders, said edge may be used as rails, and a substantially vertical, flat inner wall extending from the upper edge till close to the bottom of the trough, that said bottom is constituted by horizontal, extruded aluminum members running in



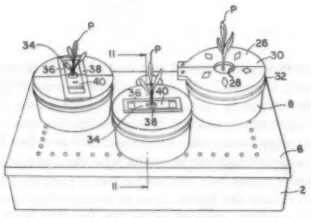
transverse direction, said aluminum members being connected to the side slats adjacent the girders, each one of said aluminum floor members comprising a top flange having a smooth surface and at least one vertical web provided with openings near the top flange, through which bars or tubes protrude, said bars or tubes connecting the floor members with each other and constituting the bottom of the trough together with the floor members, and that short sections of connecting members made of extruded aluminum connect the ends of the floor members to the side slats.

4,226,048

PLANT GROWING ASSEMBLY

Martin A. Molnar, Apt. #3, 1006 W. Loyola Ave., Chicago, Ill. 60626

Filed Dec. 8, 1977, Ser. No. 858,569
Int. Cl.[2] A01G *27/00*
U.S. Cl. 47—81 **1 Claim**



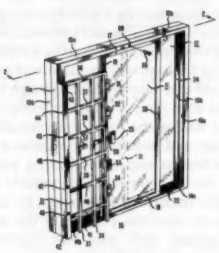
1. A plant growing assembly comprising a first housing adapted to retain water therein, said first housing having an opening in an upper surface thereof, a second housing adapted to retain a plant therein, said opening being shaped complementarily to said second housing and being adapted to receive and retain said second housing therein, a frame disposed in said first housing for supporting said second housing at the bottom of said second housing at a position removed from the bottom of said first housing, said frame having a first hole therein in alignment with said opening, a water transfer element extending through a second hole in the bottom of said second housing and said first hole and interconnecting the interior of said first housing proximate the bottom thereof and the interior of said second housing proximate the bottom thereof, to transfer water in said first housing to said plant in said second housing, and a top disposed on said second housing, said top comprising a planar top surface having an elongated opening therein, a first cover member slidably disposed between first and second tracks on said top, said tracks being disposed on opposite lengthwise sides of said elongated opening and in parallel coextensive arrangement, said first cover member being slidably movable over said elongated opening in said tracks, said first cover member having a first recess on a first edge thereof facing a central portion of said second housing, and a second cover member slidably disposed over said elongated opening between said tracks and having a second edge thereof opposed to said first edge and having a second recess therein in alignment with and complementary to said first recess, said first and second recesses forming a third hole upon abutment of said first and second edges, the third hole being adapted to be disposed about said plant, said cover members being adapted for slidable movement in said tracks apart from each other to accommodate growth of said plant, and stop means at the ends of said tracks to restrict movement of said cover members to positions within the perimeter of said planar top surface.

4,226,049

SECURITY VENTILATING SYSTEM

Charles I. Maust, 45 Blackburn Pl., Summit, N.J. 07901

Filed May 3, 1979, Ser. No. 35,475
Int. Cl.[2] E06B *9/02*
U.S. Cl. 49—57 **11 Claims**



1. A security system assembly in accordance with the present invention designed for installation in an arrangement of one or more laterally rolling or sliding doors or windows mounted in a door or window frame comprising substantially aligned upper and lower parallel tracks, and vertical door or window jamb casings at opposite edges of said frame, which assembly comprises in combination:

at least one lift-out grill comprising a plurality of horizontal and vertical bars rigidly fastened together;

an elongated channel substantially colinear with and constructed to accommodate a first one of said vertical bars adjacent one periphery of said grill, said channel secured to the inner flange of one said vertical door or window jamb casing;

a plurality of short channels secured in vertical alignment adjacent a peripheral vertical edge of one of said rolling or sliding doors or windows, which edge is constructed to close against said one door or window jamb casing;

said short channels being constructed to accommodate a second one of said vertical bars adjacent the opposite periphery of said grill, or in alternation, one or more vertical bars disposed intermediate to said first and second peripheral bars; and

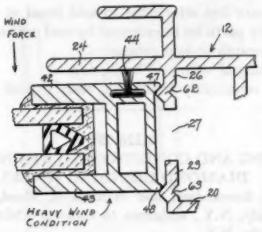
wherein said short channels are each positioned between one pair of the horizontal bars of said grill and are dimensioned not to exceed the distance between said pair of bars.

4,226,050

ANTI-LEAKAGE WINDOW FRAME CONSTRUCTION FOR TILT-IN WINDOW SASH

Gerald Kessler, Box 389, McClurg Rd. at Southern Blvd., Youngstown, Ohio 44512

Filed Feb. 2, 1979, Ser. No. 9,061
Int. Cl.[2] E05D *15/22*
U.S. Cl. 49—181 8 Claims



1. A tilt-in window assembly comprising: a window frame having vertical side rails of generally L-shaped open channel construction, and horizontal top and bottom frame portions; a sash member having a top, bottom and two sides, and slidably pivoted at its sides adjacent the bottom thereof to said side rails, and retractable bolt means holding the sides of said sash near the top thereof to said side rails; said L-shaped channel of each said side rail being open toward the inside of said sash with a first leg of said L extending parallel to said sash along the outside edge of the side of said sash, and a second leg of said L extending parallel to the thickness of said sash; weather-stripping between the outside edge of each side of said sash and the first leg of said L, said weather-stripping extending generally parallel to the second leg of said L and being normally sealingly disposed between the sash side and the first leg of said L; and inter-engageable stop means to limit deflection of said sash member toward the inside and to prevent unsealing of said weather-stripping when the sash member is subjected to heavy external wind forces, said stop means comprising respective projections on the side edge portions of the sash member and on the second leg of said L of each side rail, said projections serving to interengage when the sash member is subjected to heavy winds but the terminal portions of such projections being spaced laterally of the window assembly to permit frictional clearance of said projections when said sash member is tilted.

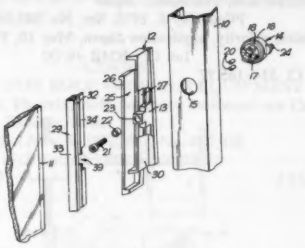
4,226,051

LOUVRE WINDOWS

Norman Thompson, Bridgnorth, England, assignor to Beta Aluminium Products Limited, Bridgnorth, England

Filed Sep. 12, 1978, Ser. No. 941,805
Claims priority, application United Kingdom, Sep. 15, 1977, 38486/77
Int. Cl.[2] E06B *7/08*
U.S. Cl. 49—403 5 Claims

1. A blade holder for a louvre window comprising an elongated member, a first longitudinally extending groove in the elongated member with an inwardly facing opening for receiving an end edge of a louvre blade, means intermediate the ends of the member for pivotally mounting the member on a window frame element, a second longitudinally extending groove in the elongated member, and an elongated reinforcement element for mounting in said second groove, said first and second longitudinally extending grooves being separated by a common wall of smaller depth than the reinforcement element, and said element being shaped to project across the common wall to engage the louvre blade when the reinforcement element and the louvre blade are received in their respective grooves.

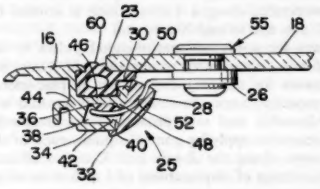


4,226,052

DISENGAGEABLE HINGE DEVICE FOR A REMOVABLE VEHICLE ROOF PANEL

George E. DeStepheno, San Dimas, Calif., assignor to Le Van Specialty Co., Inc., City of Industry, Calif.

Filed Mar. 9, 1979, Ser. No. 19,003
Int. Cl.[3] E05C *21/02*
U.S. Cl. 49—465 5 Claims



1. A disengageable hinge device for a removable vehicle roof panel associated with a fixed frame structure, comprising:

a hinge-bracket member having means to secure said bracket in a fixed position on said fixed frame structure;

a circular arcuate slot formed in said bracket having one open end terminating in a substantially vertical plane and an opposite open end terminating in a substantially horizontal plane;

a disengageable hinge-tongue member fixedly mounted to said panel for engagement with said hinge-bracket member, said tongue having an arcuate, projecting, end section to conform to said arcuate slot of said bracket member, whereby said panel must be rotated to a substantially vertical position before being separated from said frame structure; and

wherein said hinge bracket comprises a main body having said arcuate slot disposed therein, and wherein said securing means comprises:

a pair of latch fingers extending outwardly from the upper portion of said body to latch to said frame structure;

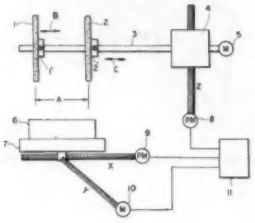
a strut member adapted to be received in said frame structure; and

a depending flange-coupling member arranged to connect to said frame structure at the lower portion thereof.

4,226,053
GRINDING APPARATUS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed May 5, 1978, Ser. No. 903,062
Claims priority, application Japan, May 10, 1977, 52-53405
Int. Cl.[3] B24B *49/00*
U.S. Cl. 51—165.77 6 Claims

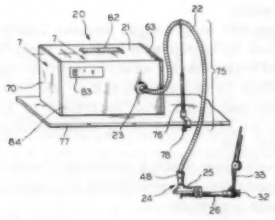


1. A grinding apparatus comprising:
at least two grinding wheels coaxially and rotatably supported on a common spindle including a first, rough-grinding wheel and a second, finish-grinding wheel having a different texture from that of the first wheel;
a worktable for mounting a workpiece in juxtaposition with said wheels;
means provided on one of said worktable and said spindle for displacing said wheels and said workpiece relatively along a Z-axis orthogonal to the spindle axis;
means for effecting relative displacement of the wheels and worktable along an X-axis which is normal to said Z-axis and is codirectional with said spindle axis;
means for effecting relative displacement of the wheels and worktable along a Y-axis which is normal to both said Z-axis and to said X-axis; and
means for applying control-signal pulses to at least said Z-axis displacement means and said X-axis displacement means for stepping the relative displacement along the respective axes, the distance between said wheels being adjustable and said distance being memorized in said means for applying control signals, each of the displacements along the Z-axis and X-axis is effected with an increment of displacement of 1 to 5 microns per pulse.

4,226,054
PARTICLE COLLECTION SYSTEM

David Coty, 9229 E. Prairie, Skokie, Ill. 60203

Continuation-in-part of Ser. No. 770,993, Feb. 22, 1977, abandoned. This application Apr. 20, 1978, Ser. No. 898,161
Int. Cl.[2] E05F *13/00*
U.S. Cl. 51—270 6 Claims

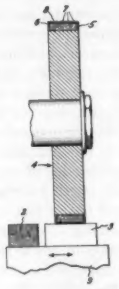


1. In an apparatus for intercepting and collecting particles debrided during use of a hand-held grinder, said apparatus of the type having a vacuum line communicating at one end with a source of vacuum within a cabinet and, at the other end; with a collector, said grinder of the type having a grinding wheel rotating about an axis, the improvement comprising:
a hood formed on said collector,
an exit port formed on said hood at right angles to said axis of rotation of said grinding wheel,
said exit port being substantially larger in diameter than the thickness of said grinding wheel,
said hood shaped to position said port proximate said grinding wheel,
said vacuum line attachable to said hood at said exit port, whereby particles intercepted by said collector are drawn therethrough to said cabinet;
a body integral with said hood; and
means to removably attach said body to said grinder.

4,226,055
DRESSING AND CONDITIONING RESIN-BONDED DIAMOND GRINDING WHEEL

Rangachary Komanduri, and William R. Reed, Jr., both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 8, 1979, Ser. No. 46,767
Int. Cl.[3] B24B *1/00*
U.S. Cl. 51—325 4 Claims



1. A method for simultaneously dressing and conditioning a resin-bonded diamond grinding wheel during grinding which comprises contacting the surface of said resin-bonded diamond grinding wheel with a wetting liquid which wets the face of the resin component of said wheel surface forming a film thereon, grinding the wetted wheel with a polycrystalline ceramic body selected from the group consisting of silicon carbide which ranges in density from about 80% to about 100% of the density of silicon carbide and silicon nitride which ranges in density from about 80% to about 100% of the density of silicon nitride generating chips of said ceramic body which adhere to said wetted resin face forming a slurry layer thereon and grinding the resulting wheel with a workpiece.

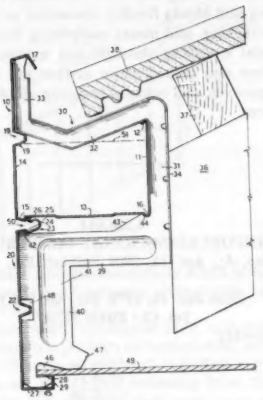
4,226,056
FASCIA GUTTER

Dennis M. Hallam, Zillmere, Australia, assignor to E. Sachs & Co. Ltd., Zillmere, Australia

Filed Jan. 18, 1979, Ser. No. 4,526
Claims priority, application Australia, Jan. 19, 1978, 3080/78
Int. Cl.[2] E04D *13/04*
U.S. Cl. 52—11 8 Claims

1. A fascia gutter assembly comprising
(a) a series of mounting brackets adapted to be secured to a roof assembly, each bracket including an upper arm which extends forwardly, and upwardly at the front thereof;
(b) a gutter having substantially vertical front and back flanges, and a bottom wall interconnecting said flanges, said back flange being mounted on and supported by said

brackets, said front gutter flange being formed with a rearwardly extending top support flange which extends over the upper end of the upper arm of said bracket, said upper arm including a vertically extending portion which bears on the upper part of said front flange below said top support flange, said gutter being further formed with a



longitudinal channel having top and bottom faces, said bottom face being below the top of the back flange of said gutter and having overflow ports formed therein, and

(c) a fascia panel mounted on and supported by said brackets below said gutter, the front wall of said fascia panel being coplanar with said front flange of said gutter.

4,226,057

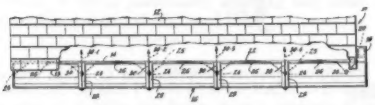
SELF-CLEANING INVERTIBLE GUTTER SYSTEM

William G. Wolcott, 25 Bramble La., Riverside, Conn. 06878

Filed Mar. 9, 1979, Ser. No. 18,942

Int. Cl.[2] E04B *13/00*

U.S. Cl. 52—11 **7 Claims**



1. An invertible gutter system comprising:

(a) a straight length of gutter having a trough-like interior;

(b) a plurality of lengths of supporting line attached to the side of the building at spaced points above the location of the gutter;

(c) said lengths of supporting line extending down near the side of the building and each being attached to a lower portion of the gutter;

(d) a plurality of lengths of hoisting and lowering line attached to the top of the gutter near the front of the gutter and extending diagonally upwardly toward the building for holding the gutter upright near the side of the building in normal operating position when said lengths of hoisting and lowering line are pulled taut; and

(e) operating mechanism attached to the building for pulling said lengths of hoisting and lowering line taut and for loosening said lengths of hoisting and lowering line when it is desired to lower the gutter into an inverted position;

whereby loosening of said lengths of hoisting and lowering line allows said gutter to roll down and over into an inverted position in which debris is dumped from the gutter and in which the trough-like interior of said inverted gutter can be viewed by a person standing on the ground, thereby to enable the interior of the gutter to be flushed out if necessary by a jet of water from the nozzle of a garden hose.

4,226,058

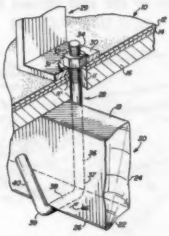
ANCHOR FOR ROOF MOUNTED EQUIPMENT

James P. Riley, Phoenix, Ariz., assignor to Goettl Air Conditioning, Inc., Phoenix, Ariz.

Filed Nov. 6, 1978, Ser. No. 957,988

Int. Cl.[2] E04F *19/00*

U.S. Cl. 52—27 **5 Claims**



1. Anchoring apparatus for securing an object to a relatively thin support having an outer surface and an inner surface, the inner surface being held by a beam, the support having therein a hole adjacent the beam, the beam having a back side and first and second opposed sides, said anchoring apparatus comprising in combination:

a. connecting means for connecting said anchoring apparatus to the object to hold the object against the support;

b. a first elongated section having a first end connected to said connecting means for extending through said hole and transmitting a force pulling said connecting means toward the support, said first elongated section extending along a first side of the beam; and said first elongated section also having a second end; said first elongated section being substantially straight;

c. a second elongated section having a first end connected to the second end of said first elongated section for engaging a back side of said beam, said second elongated section extending approximately perpendicularly to said first elongated section; said second elongated section also having a second end; said second elongated section being substantially straight; said first and second elongated sections lying in a first plane; and

d. a third elongated section having a first end connected to the second end of said second elongated section for extending beyond another side of the beam and toward the inner surface of the support to prevent said second elongated section from slipping off of the back side of the beam as a result of said force, said third elongated section being substantially straight and being inclined with respect to said first plane by a first angle, the first angle being selected so that said third, second and first elongated sections, respectively, can be sequentially passed through said hold from the outer surface of said support.

4,226,059

ATTACHING DEVICE FOR SOFFITS

Carold Pichette, 163 de l'Eglise St., Chateau Richer, Canada (G0A 1N0)

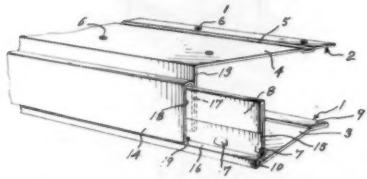
Filed Nov. 9, 1978, Ser. No. 959,332

Int. Cl.[2] E04B *7/00*

U.S. Cl. 52—94 **3 Claims**

1. An attaching device to secure soffits to the eaves of a roof or to attach other covering panels to a support, including a first

piece and a second piece, each made of an elastic sheet material, each having a profile generally in the shape of the letter L and characterized by a first branch and a second branch, the second branches being attachable one to the other by overlapping, the first branches extending in the same direction relative to the second branches when the latter are attached such that the joint has a profile in the shape of the letter U, the second branch of the said first piece being provided at its outer edge with an extension folded back twice to form two U-configurations disposed side by side on the outside of said last-named second branch, the U-configurations next to said last-named second branch opening towards said first branch of said first piece and the other U-configuration opening in a direction opposed to the first branch of this first piece, said other U-configuration defining a space, the longitudinal axis of which is substantially parallel to the said second branch of the first



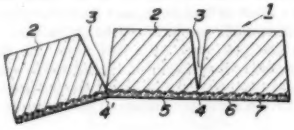
piece, whereby the second branch of the said second piece may be inserted into said space up to a limit position; a shelf formed at the free edge of said other U-configuration and partially masking the opening of said space, and longitudinally spaced-apart teeth formed on the second branch of said second piece and engaging said shelf with a snap action in the limit position of said second branch of said second piece, said shelf and teeth cooperatively maintaining the engagement of the said second branches and preventing their disengagement once the limit position is attained, the first branch of said first piece having means to secure the same to a support which is to be covered by a panel, the first branch of the second piece serving as a covering branch for the end of said panel, and the second branch of said first piece extending across the end of said panel and serving as a stop for said panel to keep said panel out of the way of said space.

4,226,060

FLOOR PLATE FOR FORMING A FOOT PATH AND METHOD OF LAYING A WALKING SURFACE ON A ROOF

Shintaro Sato, 11-8, Yoshiwara 1-chome,, Fuji-city, Shizuoka Prefecture, Japan

Filed Sep. 26, 1978, Ser. No. 946,524
Claims priority, application Japan, Nov. 26, 1977, 52-141789
Int. Cl.[2] E04B *1/00*
U.S. Cl. 52—99 **5 Claims**



1. A floor plate for use in forming a floor surface, said floor plate comprising:

a plate-shaped member formed of a brittle material such as concrete, said member having spaced parallel first and second major surfaces;

said member having formed in at least said first major surface thereof a plurality of crack inducing grooves dividing said member into a plurality of blocks which are connected to each other by weak joint portions defined between the bottoms of said crack inducing grooves and said second major surface, said weak joint portions having a thickness and strength to allow cracking therealong when said member is placed on a support layer having surface irregularities and when a load is applied thereto; and

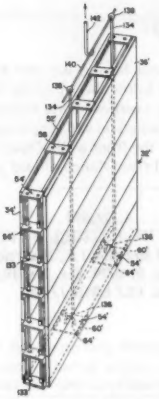
said member having incorporated therein means for maintaining said blocks flexibly connected to each other after said cracking, said means comprising flexible reinforcing material extending through said member at a position between said second major surface and said bottoms of said grooves, said material spanning all of said weak joint portions.

4,226,061

REINFORCED MASONRY CONSTRUCTION

Paul T. Day, Jr., Apt. 14, 2909 Fallstaff Rd., Baltimore, Md. 21209

Filed Jun. 16, 1978, Ser. No. 916,126
Int. Cl.[2] E04H *17/00*
U.S. Cl. 52—122 **34 Claims**



17. Reinforced masonry construction for walls and slabs, including

(a) permanent forms spaced apart a predetermined distance in opposed relationship, leaving a void therebetween

(b) each of said opposed forms comprising a plurality of elongated, preformed panels arranged in rows with the longitudinal edges in contiguous relationship

(c) each of said panels including a body portion of cementitious material

(d) a reinforcing truss embedded in said body portion

(e) ties in vertically aligned relationship connecting each row of opposed panels for positioning said panels and spanning the void therebetween

(f) each of said ties including a flat body portion

(g) the ends of said body portion being adapted for engagement with opposed panels

(h) the body portion of said tie being provided with at least one opening

(i) a reinforcing rod extending through the vertically aligned ties for substantially the entire transverse dimension of the forms, and

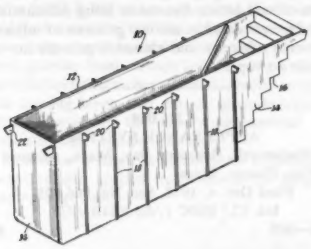
(j) An insulating agent between said forms engaged with said ties and reinforcing rod to provide a structure of high compression strength.

4,226,062

MOLDED STORAGE RECEPTABLE

Elbert E. Doane, 4961 SW. 17th St., Fort Lauderdale, Fla. 33517

Filed Jul. 17, 1978, Ser. No. 925,000
Int. Cl.[2] E04F *11/00*
U.S. Cl. 52—169.6 2 Claims



1. A prefabricated fiberglass receptacle which is mounted in the earth for use as a subterranean storage area or vehicle mechanical pit, comprising:

a molded, substantially rectangular shell, said shell having molded integrally a plurality of vertical sides, an end wall, and a bottom surface, said shell including a premolded stairway access at one end extending from the bottom surface to the top edge, the shell being open across the top;

a plurality of U-shaped ribs, each of said ribs being disposed vertically on the side walls and spaced apart and continuing across the bottom surface on the exterior, said ribs being used for increasing the structural rigidity of the shell;

a plurality of laterally, outwardly extending flanges disposed around the top of the shell opening but below said shell opening for engagement with the earth, said laterally disposed flanges being formed with said ribs, said shell being mountable within a cavity in the earth such that the upper open portion is substantially ground level while the laterally disposed flanges are within the earth's surface; and

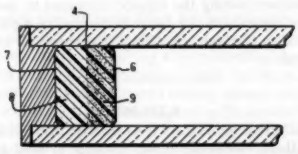
an elongated, substantially flat fiberglass prefabricated molded cover mountable on the top of said storage shell to provide a sealed relationship covering said shell, said cover being disposed at ground level.

4,226,063

HERMETIC SEALS IN MULTIPLE PANE WINDOWS

Pierre Chenel, Enghien les Bains, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Dec. 11, 1975, Ser. No. 639,786
Claims priority, application France, Dec. 11, 1974, 74 40827
Int. Cl.[2] E06B *7/12*
U.S. Cl. 52—172 3 Claims



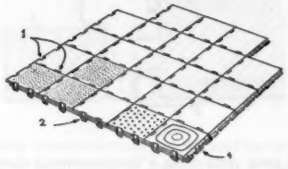
1. A multiple pane window comprising a pair of transparent or translucent sheets arranged in generally parallel spaced relationship, an inner filamentary seal of plastic material between said sheets adjacent the periphery thereof, and an outer seal encircling said inner seal and positioned to seal together the peripheral edges of said sheets, and inner filamentary seal having desiccant material comprising a mixture of molecular sieves having absorption pores of about 4Å and of about 10Å respectively incorporated therein throughout its cross-section with the concentration of the desiccant material substantially greater in the inner portion thereof than in the outer portion thereof.

4,226,064

FLOORING COMPRISING ADJOINING PLASTICS ELEMENTS

Hans Kraayenhof, 8 Vlosbergweg, Asten Holland, Netherlands

Filed Jan. 18, 1978, Ser. No. 870,469
Claims priority, application Netherlands, Feb. 2, 1977, 7701096
Int. Cl.[2] B44D *5/08*
U.S. Cl. 52—180 3 Claims



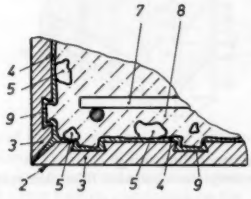
1. Flooring which comprises: a plurality of adjoining perforate generally planar plastic elements, each of said elements including first means connecting and locking together adjacent elements, said first means being formed in the material of each element during the moulding thereof, said first means including depending pawls which are selectively engageable with an adjacent element, said pawls being disposed on each of said elements to engage automatically on interconnection of adjacent elements, each of said elements further including second means to terminate the interlocked condition of adjacent elements, said second means to terminate including third means to shift said pawl, said second means to terminate being accessible from the upper surface of said flooring.

4,226,065

STAIR CONSTRUCTION AND METHOD FOR MAKING SAME

Alfred Jagemann, Warteweg 11, 3401 Seulingen, Fed. Rep. of Germany

Filed Mar. 28, 1979, Ser. No. 24,729
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1978, 7809575[U]; Oct. 20, 1978, 2845699
Int. Cl.[2] E04F *11/10*; E04C *2/26*
U.S. Cl. 52—189 16 Claims

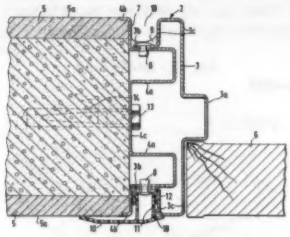


1. In a stair comprising a non-removable wooden shell which essentially forms the stair surface, a reinforcement disposed in the interior space of said stair, a hardened filling composition poured into said space and connecting said wooden shell and reinforcement, the improvement comprising:

a resin sealing layer disposed between said wooden shell and

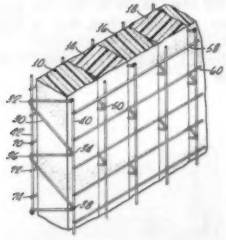
said filling composition, wherein said filling composition comprises cement-bonded concrete, said stair further comprising an attachment bridge disposed between said wooden shell and said filling composition.

4,226,066
DOOR JAMB
Hans B. F. Persson, Gärdesgatan 8, 46400 Mellerud, Sweden
Filed Sep. 27, 1978, Ser. No. 946,459
Int. Cl.³ E06B *1/04*
U.S. Cl. 52—211 **6 Claims**



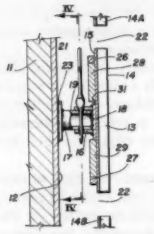
1. A door jamb comprising, a first sheet metal section having a flat portion for attachment to a vertical face of an aperture in a wall and a pair of channel-shaped portions on either side of said flat portion, an inner flank of one channel-shaped portion being connected by said flat portion to an inner flank of the other channel-shaped portion, a second sheet metal section for accommodating one edge of a door leaf, said second sheet metal section including a pair of longitudinal flange portions, each of which is slidably displaceable transversely of a respective one of the outer flanks of said channel-shaped portions, and means for fastening each of said longitudinal flange portions in a selected transverse position on the respective one of said outer flanks.

4,226,067
STRUCTURAL PANEL
Richard F. Artzer, Riverside, Calif., assignor to Covington Brothers Building Systems, Inc., Riverside, Calif.
Filed Dec. 5, 1977, Ser. No. 857,235
Int. Cl.² E04C *2/26*
U.S. Cl. 52—309.12 **21 Claims**



1. A structural panel comprising:
a plurality of contiguous elongated filler elements forming a panel core,
a plurality of lattice structures, each being interposed between a pair of mutually contiguous ones of said elements and each being pressed into mutually opposed surfaces of such contiguous elements whereby mutually adjacent ones of said elements have opposed surfaces in face-to-face contact with each other, and
a plurality of transverse members extending across said filler elements and across said core, each said transverse member being fixed to at least a group of said lattice structures to thereby hold said lattice structures and filler elements pressed together in a unitary panel configuration,
said mutually opposed surfaces of said elements having grooves formed therein by pressure of said structures in a pattern corresponding to said lattice structures, portions of said lattice structures being substantially completely embedded in mating grooves of adjacent filler elements whereby said elements provide an enhanced barrier to vapor.

4,226,068
APPEARANCE SYSTEM
Walter J. Wadsworth, Buzzards Bay, Mass., assignor to Fern Engineering, Bourne, Mass.
Filed Dec. 4, 1978, Ser. No. 966,001
Int. Cl.² E04C *1/40*; E04B *1/38*
U.S. Cl. 52—508 **5 Claims**



1. Appearance system for use with an outdoor structure having a vertical surface, comprising:
(a) a plurality of flat panels, each having a decorative outer surface facing outwardly of the said vertical surface and having an inner surface lying in spaced, parallel relationship to the said vertical surface, the outer surfaces of the panels lying in the same general plane with adjacent edges of adjacent panels having a substantial space between them, the said space between the adjacent edges of adjacent panels being sufficient to permit human access to the rear of each panel and to the fastener,
(b) an elongated primary support element fixed to and extending at a right angle to the center of the inner surface of each panel,
(c) an elongated secondary support element fixed to the said vertical surface and extending horizontally therefrom, the primary and secondary support elements having conjugate surfaces to lock them rigidly together, the secondary support being provided with a base which is welded to the vertical surface of the structure, the conjugate surfaces consisting of an external cylindrical surface on one of the support elements and an internal cylindrical surface on the other support element, and
(d) a fastener joining the support elements to prevent unintended separation, the fastener consists of a pin extending vertically through matching apertures in the support element.

4,226,069
SHINGLE SIMULATING STRIP MATERIAL
Caryl E. Hinds, Norwood, Mass., assignor to Bird & Son, Inc., East Walpole, Mass.
Continuation-in-part of Ser. No. 875,240, Feb. 6, 1978, abandoned. This application Feb. 23, 1979, Ser. No. 14,368
Int. Cl.² E04D *1/00*
U.S. Cl. 52—521 **1 Claim**

1. A first laminated strip material adapted to be laid in horizontally extending weatherproof interlocked courses on a roof

deck and secured thereto by concealed fastening means, said first laminated strip material comprising

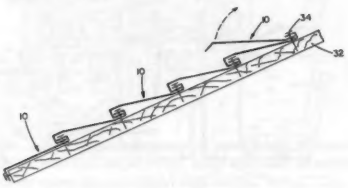
an underlying plastic base sheet of between about 1 to 10 mils thickness and formed from a group consisting of plastic films, plastic foams and bonded non-woven webs of plastic fibers

a self sealing asphalt mastic coating layer having a thickness of about 0.050–0.100 inches adhered to the front face only of said base sheet, the rear face of said base sheet forming the rear face of said laminated strip material

a mineral granule front surface layer having a thickness of about 0.030 to 0.050 inches adhered directly to said asphalt mastic coating layer, said mineral granule layer forming the front face of said laminated sheet material

said laminated strip material having

on its front face a single longitudinally extending groove adjacent to and spaced from one of its longitudinally extending edges and



on its rear face a single longitudinally extending groove adjacent to and spaced from the other of its longitudinally extending edges

said grooves extending for a width at least about equal to the total thickness of said strip material and for a depth of at least about one-half of the thickness of said strip material

whereby said first laminated strip material is foldable along said grooves for 180 degrees around the edge of a second adjacent strip of said laminated strip material without damaging said laminated strip material, for 180 degree fold interlocking of the edges of adjacent strips of said strip material to conceal said fastening means, with said fastening means extending through said first strip material and into said roof deck for securing the strip to the deck, said asphalt mastic sealing material automatically sealing around the shanks of said fastening means and preventing the passage of moisture through holes formed in said first laminated strip material by the fastening means.

4,226,070

SYNTHETIC SPANISH OR MISSION TILE ROOFING SYSTEM

Robert C. Aragon, 6405 Ester NE, Albuquerque, N. Mex. 87109

Filed Apr. 30, 1979, Ser. No. 34,854

Int. Cl.[3] **E04B** *7/00;* **E04D** *1/30, 3/40*

U.S. Cl. 52—57 **1 Claim**

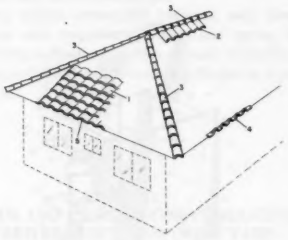
1. A synthetic spanish tile roofing system said system comprising:

a panel having one or more rows having alternate arcuate sections and flat sections and on its lower edge of said panel, its entire length, having a lip protruding downward and on its upper edge, its entire length having a lip protruding upward, and the panels ending on one end with an arcuate section and on the other end a flat section and the end of said panel, having a flat section, having a lip upward the entire length of the end, and the alternate arcuate and flat sections of the panel being dimensioned similar to Spanish tile; and

a bird stop having a mounting lip its entire length on its bottom edge, and the top edge having an alternate arcuate sections and flat sections configuration to mate with the alternate arcuate sections and flat sections of the said panel, and the bird stop having a protruding lip along the entire upper edge which engages the downward protruding lip of a lowest panel installed on a roof, and

a hip cap section having an arcuate crossection and a plurality of false lips appearing as the ends of tile and the lower end having a lip protruding downward and the upper end having a lip protruding upward so that the lower end of one hip cap section overlaps the upper end of the adjoining hip cap section, and

a ridge row cap having a plurality of alternating arcuate sections and flat sections, dimensioned to mateably fit the



alternating arcuate sections and flat sections of the aforesaid panel, and having an arcuate section whose axis is normal to the arcuate and flat sections of the ridge row cap, said ridge row cap being used in pairs so that the arcuate sections normal to the arcuate and flat sections of the ridge row cap overlap at the ridge row; and

said panel, bird stop, ridgerow cap and hip cap are made of fiberglass material of sufficient strength and thickness for roofing material, and being impregnated with pigment or painted to appear as Spanish tile.

4,226,071

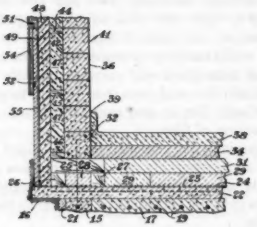
METHOD FOR THE PREPARATION OF LOW TEMPERATURE STRUCTURE

Robert B. Bennett, Hebron, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 906,181, May 15, 1979. This application Jul. 20, 1979, Ser. No. 59,411

Int. Cl.[2] **E04B** *1/00*

U.S. Cl. 52—741 **1 Claim**



1. A method for the preparation of a thermally insulated masonry building, the steps of the method comprising providing a building foundation including a masonry slab, disposing on said slab a vapor barrier, positioning on the vapor barrier a layer of thermally insulating material, constructing masonry walls on the layer of insulating material disposed on the slab, providing a floor member over the insulating material disposed on the slab, providing a roof which covers space enclosed by the walls, disposing on the roof and walls a layer of thermally insulating material, disposing a vapor barrier over the insulating material on the walls and roof and joining the vapor barrier

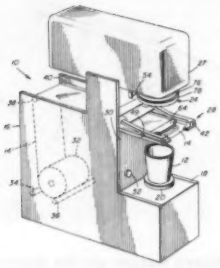
of the walls to the vapor barrier disposed on the slab of the building.

4,226,072

APPARATUS FOR APPLYING A FILM LID TO A CUP

Winton E. Balzer, 963 Central Ave., Needham, Mass. 02192, and Kenneth M. Knobel, 37 Percy Rd., Lexington, Mass. 02173

Filed Dec. 6, 1978, Ser. No. 966,876
Int. Cl.³ B65B *7/28;* **B67B** *3/04;* **B65B** *51/14*
U.S. Cl. 53—298 **2 Claims**



1. Apparatus for heat sealing a section of heat sealable film over the top of a cup, or the like, comprising

(a) a cup holder adapted to reciprocate along a vertical axis,

(b) a heat sealing and film severing head mounted in spaced relation above said holder,

(c) a film advance mechanism mounted for movement in a horizontal plane between said holder and said head for drawing from a roll a leading section of film across said axis in position between said holder and head,

(d) control means operatively connected to said holder, head and mechanism for raising said holder and a cup thereon upwardly against the lower face of said film section, to apply the upper face of said film section against said head to heat seal said film section to the rim of said cup and sever said section from said roll, then lowering said holder and cup, and actuating said mechanism to draw a fresh section of film into position,

(e) said film advance mechanism including a carriage mounted for horizontal reciprocation from a retracted to an extended position,

(f) said carriage including jaws and jaw actuating means adapted to open and close said jaws against said film in response to said control means whereby said jaws are closed while holding a section of film extended over said cup and open when said carriage retracts along the feed path of said film said jaws then closing to grip the leading edge of said film as said carriage extends to draw out a fresh section of film,

(g) said carriage including a relatively fixed lower jaw assembly and a relatively movable upper jaw assembly, each assembly being formed with a pair of parallel arms extending forwardly of said carriage parallel to the side edges of said film, .

(h) said upper jaw assembly being pivotally connected to said lower jaw assembly whereby biasing movement applied at one end of said upper jaw assembly will open and close said jaw selectively,

(i) said apparatus including a film stabilizer comprising a flat weighted plate mounted adjacent the path of travel of said film proximate to the retracted position of said jaws for sliding engagement with the upper surface of said film, said plate being restrained against horizontal movement but free for limited vertical movement above the path of said film, and,

(j) means for biasing said upper jaw assembly,

(k) said film stabilizer including a pair of spaced vertical rods slidably mounted to said carriage and engaging opposite side edges of said plate and a weighted member engaging the lower ends of said rods,

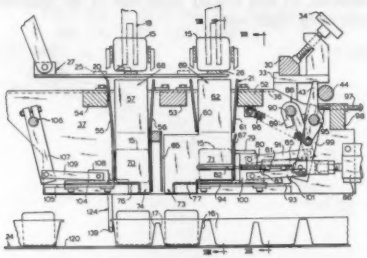
(l) said plate being formed with a pair of notches in the forward edge thereof to receive the gripping ends of said jaws when said carriage is in a retracted position.

4,226,073

TRAY LOADER

Edward Rose, Skokie, and Robert A. Roth, Chicago, both of Ill., assignors to Peters Machinery Company, Subsidiary of Katy Industries, Inc., Chicago, Ill.

Filed May 3, 1979, Ser. No. 35,687
Int. Cl.³ B65B *35/30, 39/14*
U.S. Cl. 53—532 **18 Claims**



1. In an apparatus for loading cookies and the like into trays for packaging,

at least one cookie receiving tray having aligned successively arranged compartments therein,

a transfer conveyor transferring counted groups of cookies for loading into said compartments,

a tray conveyor disposed beneath and extending transversely of said transfer conveyor,

drop gates movable to release counted groups of cookies from said transfer conveyor for loading into said compartments,

an individual drop chute extending beneath each drop gate for guiding groups of cookies released by said drop gates to said compartments,

the improvement comprising:

release means for said drop chutes movable relative to the trays on said tray conveyor to position and release cookies from said drop chutes for loading into said compartments, and

means providing dwells in travel of said trays along said tray conveyor upon release movement of said release means.

4,226,074

LAWNMOWER DECK

David L. Mullet, Hesston; Raymond J. Rilling, Moundridge, and Elmer D. Voth, Newton, all of Kans., assignors to Excel Industries, Inc., Hesston, Kans.

Filed Jan. 8, 1979, Ser. No. 1,532
Int. Cl.³ A01D *67/00*
U.S. Cl. 56—320.2 **3 Claims**

1. A lawnmower deck comprising:

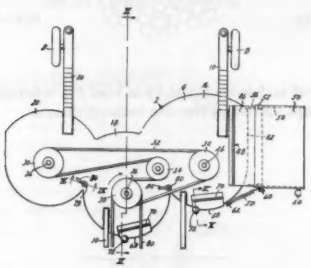
a. a deck body consisting of a horizontal deck plate having a peripheral depending skirt, whereby to form a plurality of compartments spaced laterally apart beneath said deck plate, said skirt being interrupted to form a laterally opening side outlet for cuttings, relative to the direction of travel of the mower, and a rear outlet for cuttings at the rearward portion of at least certain of said compartments,

b. means for supporting said deck body for movement over the ground with the lower edge of said skirt spaced above ground level,

c. a rotatably driven horizontal blade mounted in each of

said deck compartments below said deck plate and all turned in the same direction so that in the forward portions of their orbits they move toward the side of said deck having said side outlet opening, said compartments being interconnected in a path across the forward portions of said blades,

d. a gate movably mounted on said deck body and operable to selectively open or close said side outlet opening,



e. a gate movably mounted on said deck body in association with each of said rear outlets, each operable to selectively open or close its associated rear outlet, and

f. a gate disposed interiorly of the deck intermediate each successive pair of compartments, said gate being movable relative to said deck body selectively either to close the interconnection between said successive compartments, or to open said interconnection.

4,226,075

FRUIT PICKING APPARATUS

George Adams, 383 N. Beckett Pl., Grover City, Calif. 93433

Filed Feb. 22, 1979, Ser. No. 13,877

Int. Cl.³ A01D *46/24*

U.S. Cl. 56—337 **1 Claim**

1. An apparatus for picking fruit from trees comprising:

an elongated member having an upper end and a lower end;

actuation means mounted on said lower end of said member;

cutting means mounted on said upper end of said member, said cutting means being movable to effect the cutting operation, said actuation means being connected to said cutting means, upon manual activation of said actuation means said cutting means being moved through the cutting operation;

guide means mounted on said member directly adjacent said upper end and said cutting means, said guide means being tubular for conducting therethrough a piece of fruit in a particular direction after the stem of the fruit has been severed by said cutting means, said guide means including an elongated flexible walled chute for guiding and depositing the fruit in a container without bruising of the fruit;

said cutting means includes a rotatable cylinder defining an interior chamber, said rotatable cylinder having a cylindrical wall, a cutting blade fixed to said upper end of said member and mounted within said interior chamber and located in close proximity of said cylindrical wall, a first opening formed within said cylindrical wall, a second opening formed within said cylindrical wall, a single piece of fruit to be inserted through said first opening and upon activation of said actuation means the cylindrical wall is moved across said fixed cutting blade to thereby sever the stem of the fruit and cause the fruit to fall freely within said interior chamber and out through said second opening and into said guide means; and

spring biasing means connected between said elongated member and said rotatable cylinder, said spring biasing means exerting a continuous bias on said rotatable cylinder tending to locate said rotatable cylinder in a pre-cutting position.

4,226,076

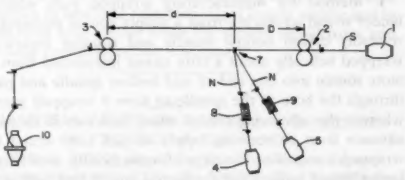
APPARATUS AND PROCESS FOR PRODUCING A COVERED ELASTIC COMPOSITE YARN

Ernest J. Griset, Jr., Asheville, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Filed Dec. 4, 1978, Ser. No. 965,774

Int. Cl.³ D02G *3/32*

U.S. Cl. 57—12 **21 Claims**



1. In a process for covering an elastic core yarn with inelastic textured cover yarns, the steps comprising:

continuously supplying an elastic core yarn to feeder means;

applying a controlled stretch to said core yarn by passing the yarn between a pair of drawing rolls arranged downstream of said feeder means;

intertwining at least two strands of textured cover yarn with said core yarn by passing the cover yarns and the core yarn through a thread guide disposed intermediate said feeder means and said drawing rolls, and

further intertwining said cover yarns with said core yarn by applying twist thereto downstream of said drawing rolls.

14. An apparatus for covering an elastic core yarn with inelastic textured cover yarns comprising:

feeder means for supplying a core yarn at a first predetermined rate;

a pair of drawing rolls arranged downstream of said feeder means for withdrawing the core yarn from said feeder means at a second predetermined rate which is greater than the first predetermined rate, to thereby stretch the core yarn in a controlled manner;

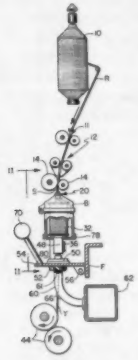
thread guide means disposed intermediate said feeder means and said drawing rolls for guiding said core yarn and at least two textured cover yarns along a preselected linear path so the cover yarns will intertwine with each other and said core yarn and form a composite yarn before entering between said pair of drawing rolls; and

means disposed downstream of said drawing rolls, for applying twist to said composite yarn as it passes through said drawing rolls, whereby said cover yarns are twisted about said core yarn.

4,226,077
METHOD AND APPARATUS FOR MANUFACTURING WRAPPED YARNS

Richard G. Hilbert, Smithfield, R.I., assignor to Leesona Corporation, Warwick, R.I.

Continuation-in-part of Ser. No. 947,137, Sep. 29, 1978, abandoned. This application Mar. 8, 1979, Ser. No. 18,721
Int. Cl.[3] D02G 3/36; D01H 7/18, 11/00
U.S. Cl. 57—18 25 Claims



1. Method for manufacturing wrapped yarn wherein a binder strand advancing from a supply source mounted on a rotatably driven hollow spindle and rotating therewith is wrapped helically about a core strand introduced from a remote source into one end of said hollow spindle and passing through the bore of the spindle to form a wrapped yarn and wherein the advancing binder strand balloons in its path of advance from its rotating supply to said core strand being wrapped, comprising the steps of: substantially enclosing said binder strand balloon and the ingress end of said hollow spindle in a zone isolating the same from the ambient atmosphere while providing an ingress guide opening toward the bore of said hollow spindle for guiding said core strand to said bore from a core strand source remote from said spindle.

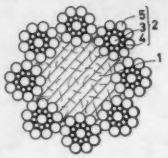
13. In an apparatus for manufacturing wrapped yarn wherein a binder strand advancing from a supply source mounted on a rotatably driven hollow spindle for rotation therewith is wrapped helically about a core strand moving from a remote source into the ingress end of said spindle and through the bore of said spindle to form a wrapped yarn and wherein the binder strand balloons in its path of advance from its rotating supply to said core strand being wrapped comprising, in combination, the improvement comprising enclosure means for enclosing said balloon in its substantial entirety up to said ingress end of said spindle to isolate said balloon from airborne textile fly or lint while providing an opening for the passage of said core strand to said spindle bore from said remote source.

4,226,078
WIRE ROPE

Kazutoshi Ohta, and Hironori Takano, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1978, Ser. No. 936,555
Claims priority, application Japan, Aug. 24, 1977, 52-103465
Int. Cl.[3] D07B 1/06
U.S. Cl. 57—213 10 Claims

1. In a wire rope formed by twisting a first type of metal wire together with a second type of metal wire, the improvement comprising: the acoustic wave propagation velocity of said first type of metal varies from the acoustic wave propagation

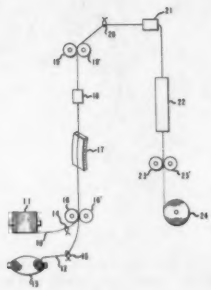


velocity of said second type by at least 5% wherein said wire rope damps vibrations that are induced therein.

4,226,079
HEATHER YARN MADE BY COMBINING POLYESTER AND POLYAMIDE YARNS

Bruce D. Mountney, and Ralph C. Wirsig, both of Kingston, Canada, assignors to Du Pont Canada Inc., Montreal, Canada

Filed Apr. 16, 1979, Ser. No. 30,709
Claims priority, application United Kingdom, May 4, 1978, 17857/78
Int. Cl.[3] D02G 3/02; D02J 1/22
U.S. Cl. 57—288 8 Claims



1. A continuous process for producing heather yarn comprising the steps of combining a continuous filament polyester feed yarn having a residual draw ratio in the range of from 1.6 to 2.0 with a continuous filament polyamide feed yarn having a residual draw ratio in the range of from 106 to 120 percent of the residual draw ratio of the polyester feed yarn, feeding the combined yarns to a draw-texturing zone, false twist texturing and drawing the combined yarns in the draw-texturing zone at a draw ratio equivalent to 95 to 105 percent of the residual draw ratio of the polyester feed yarn, feeding the combined yarns from the draw-texturing zone to a jet-intermingling zone, randomly entangling the combined yarns together in the jet-intermingling zone and withdrawing the heather yarn.

4,226,080

LOADING DEVICE FOR FALSE-TWIST APPARATUS

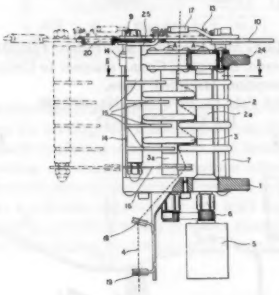
Theo Bieber; Friedrich Schuster; Günther Paul; Günther Schmitt, and Wolfgang Schmucker, all of Hammelburg, Fed. Rep. of Germany, assignors to Kugelfischer Georg Schafer & Co., Schweinfurt, Fed. Rep. of Germany

Filed May 30, 1979, Ser. No. 43,847

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1978, 2824034

Int. Cl.[3] **D01H** *7/92, 13/04*

U.S. Cl. 57—339 **18 Claims**



1. In combination with a false-twist apparatus including:

a support defining at least three generally parallel and radially spaced axes surrounding a central axially extending twisting region;

respective shafts lying on said axes and journaled in said support for rotation about the respective axes;

respective axially staggered sets of axially spaced disks fixed on said shafts, said disks having rims radially overlapping at said twisting region; and

a pair of yarn eyes axially flanking said disks and axially aligned with said twisting region, whereby a yarn to be false-twisted can pass axially through one of said eyes, then zig zag along said region in contact with said disks, and then axially through the other eye;

the improvement comprising:

drive means connected to all of said shafts for permanently connecting same together for joint rotation, whereby a yarn passing through said eyes and said region is false-twisted by the rotating disks;

a holder displaceable in a substantially straight line generally perpendicular to said region toward and away from said region; and

a loading arm carried on and jointly displaceable with said holder and having a yarn-pushing tip turned toward said region and engageable between said disks, said tip being displaceable with said arm between an outer position spaced from said disks and an inner position with said tip and a yarn engaged thereover in said region and axially between said disks.

4,226,081

ELECTRONIC TIMEPIECE

Singo Ichikawa, Sayama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1978, Ser. No. 919,675

Claims priority, application Japan, Jul. 1, 1977, 52/78521

Int. Cl.[2] **G04C** *3/00*

U.S. Cl. 368—66 **8 Claims**

1. An electronic timepiece comprising:

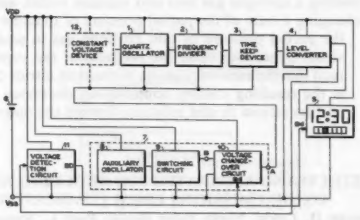
(a) a time reference signal supply source for generating a time reference signal;

(b) a time keep circuit for preparing a time keep signal on the basis of said time reference signal;

(c) a time display device driven by the output delivered from said time keep circuit and displaying times;

(d) a power source;

(e) a voltage detection circuit for detecting the voltage of said power source and generating a first signal when the voltage is higher than a predetermined value and a second signal when the voltage is lower than the predetermined value; and



(f) a voltage converter connected to the power source for providing an output voltage which is less than the voltage of the power source and including a circuit for connecting the output voltage of said voltage converter to said time reference signal supply source and to said time keep circuit when the first signal from said voltage detection circuit is generated and for connecting the power source directly to said time reference signal supply source and to said time keep circuit when the second signal from said voltage detection circuit is supplied.

4,226,082

ORNAMENTAL PART FOR WATCHES AND METHOD OF PRODUCING THE SAME

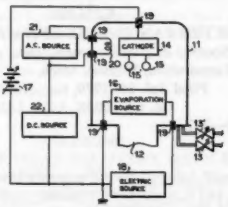
Nobuo Nishida, 2-26-24, Igusa, Suginami-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 750,885, Dec. 15, 1976, abandoned. This application Sep. 25, 1978, Ser. No. 945,292

Claims priority, application Japan, Jun. 7, 1976, 51/66320; Jun. 7, 1976, 51/66321; Jun. 7, 1976, 51/66322; Jun. 7, 1976, 51/66323; Jun. 7, 1976, 51/66324; Jun. 7, 1976, 51/66325; Jun. 7, 1976, 51/66326; Jun. 7, 1976, 51/66327; Jun. 7, 1976, 51/66328; Jun. 7, 1976, 51/66329; Jun. 7, 1976, 51/66331; Jun. 7, 1976, 51/66332; Jun. 7, 1976, 51/66333; Jun. 7, 1976, 51/66335; Jun. 7, 1976, 51/66336

Int. Cl.[2] **G04B** *37/00;* **B05D** *3/06*

U.S. Cl. 368—285 **20 Claims**



1. An ornamental part for watches comprising a substrate and a composite coating essentially consisting of titanium nitride and titanium formed by physical vapor deposition, said coating including an amount of titanium which continuously decreases from the portion adjacent said substrate to the surface thereof wherein said coating has a color tone with a brightness value of from 10 to 22 for a mirror surface test piece defined by a color difference measuring unichromatic system, with a ratio of red color to green color of from -5 to $+5$ and with a ratio of a yellow hue to blue color of from 0 to $+5$.

8. In the method of forming a coating essentially consisting of titanium nitride and titanium on the surface of a substrate by the physical vapor deposition method, a method of producing an ornamental part for watches comprising;

evaporating titanium from a source of evaporation at a substrate temperature ranging from about 100° to about 300° under the condition in which a voltage sufficient for producing glow discharge is applied across said substrate and said source of evaporation placed in a vacuum vessel;

feeding a nitrogen gas into said vacuum vessel; and

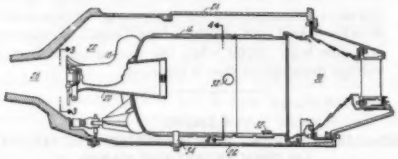
changing a ratio of the partial pressure of titanium vapor to the partial pressure of said nitrogen gas in said vacuum vessel depending upon the progress of the vaporization, such that the ratio of titanium to titanium nitride contained in the resulting coating continuously decreases from the portion closest to said substrate toward the outer surface.

4,226,083

METHOD AND APPARATUS FOR REDUCING NITROUS OXIDE EMISSIONS FROM COMBUSTORS

George D. Lewis, North Palm Beach; Paul L. Russell, Lake Park, and Jeffrey Stettler, Palm Beach Gardens, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 19, 1978, Ser. No. 870,789
Int. Cl.[2] F02C 7/22
U.S. Cl. 60—39.06 **6 Claims**



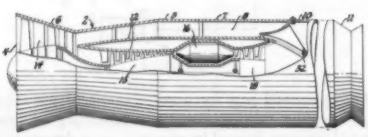
1. A combustor structure having a combustion zone including a central portion and a radially outward portion encased by a cylindrical body, and having a fuel and air mixing zone upstream thereof which includes a main fuel and air mixing tube surrounded by a plurality of pilot fuel and air mixing tubes wherein said main tube includes means for circumferentially swirling effluent dischargeable therefrom into the central portion of the combustion zone and wherein said pilot tubes are so oriented as to cause effluent dischargeable therefrom to swirl circumferentially about the radially outward portion of the combustion zone.

4,226,084

DUCTED FAN ENGINE EXHAUST MIXER

Esten W. Spears, Jr., Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 24, 1970, Ser. No. 58,127
Int. Cl.[3] F02K 3/06, 1/26
U.S. Cl. 60—262 **3 Claims**



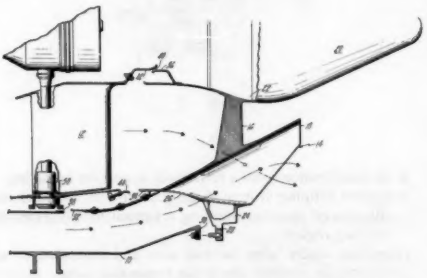
1. A jet propulsion engine comprising, in combination, a gas turbine having a gas discharge end, a bypass duct surrounding the turbine, means driven by the turbine operative to discharge air through the duct, a common outlet pipe for the turbine and bypass duct extending downstream therefrom, and means for mixing the air and gas and minimizing thermal radiation from the turbine through the duct comprising: a fairing enclosing the discharge end of the turbine, a plural number of circumferentially spaced exhaust pipes leading from the turbine discharge end through the fairing, a baffle extending around the fairing and spaced from the outlet pipe and fairing so as to define air passages extending over both inner and outer sides of the baffle, the baffle including lobes extending inwardly and downstream behind the exhaust pipes so as to hide the exhaust pipes from the outlet of the outlet pipe and allow the mixture of gas and air inside the baffle to flow rearwardly principally between adjacent lobes.

4,226,085

UNITARY PLUG MIXER AND SUPPORT THEREFOR

Leonard A. Johnson, Ellington, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Feb. 13, 1978, Ser. No. 877,206
Int. Cl.[2] F02K 3/02
U.S. Cl. 60—262 **4 Claims**



1. A combined convoluted lobe mixer and plug for a fan jet engine having a turbine exhaust case and a generally cylindrical tail pipe spaced from and concentric to said turbine exhaust case, said turbine exhaust case having an exit exhausting the gas turbine working medium, said space between said exhaust case and tail pipe defining a passage for the fan exhaust air, said lobed mixer having a plurality of alternately circumferentially spaced crown portions and valley portions, a first plurality of radially extending struts carried by at least some of said crown portions and a second plurality of radially extending struts extending between at least some of said valley portions and said plug, and means carried by said first struts for attaching and providing the primary support for said combined convoluted lobe mixer and plug adjacent said turbine exhaust case for mixing the flow streams from said turbine exhaust case and said passage.

4,226,086

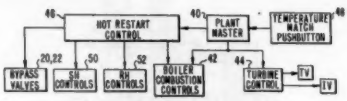
AUTOMATIC RESTART CONTROL FOR A POWER PLANT BOILER

Morton H. Binstock, Pittsburgh; Robert C. Lehmer, Shaler Township, Allegheny County; Steven J. Johnson, McCandless Township, Allegheny County; John J. Topolosky, Monroeville, and Thomas E. Smith, Gibsonia, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 21, 1979, Ser. No. 40,782
Int. Cl.[3] F01K 13/02
U.S. Cl. 60—656 **10 Claims**

1. A hot restart control for a power plant having a boiler and a steam turbine with steam admission valve means for turbine steam flow and bypass valve means for bypass steam from the boiler to the plant condenser, said control comprising means for generating a turbine metal temperature signal, means for generating a boiler steam temperature signal, means for generating a boiler throttle pressure signal, computer means for generating a target boiler load and pressure for a turbine and steam temperature match in response to the turbine metal

temperature and throttle pressure, means for controlling the boiler combustion to increase the boiler firing rate after a boiler shutdown with the turbine admission valve means closed so as to increase the boiler steam pressure and temperature with continuously adequate boiler steam flow, means for operating said bypass valve means to control the steam throttle pressure to a pressure setpoint based on the target pressure with the turbine admission valves remaining closed, means for detecting



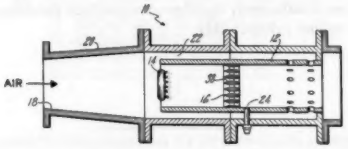
when boiler steam and turbine temperature match conditions exist and for holding said combustion controlling means when such match conditions are achieved, and means for controlling the opening movement of the turbine admission valves to transfer steam flow to the turbine from said bypass valve means so as to accelerate, synchronize and load the turbine as said bypass valve operating means provides steam throttle pressure control with closing bypass valve movement.

4,226,087

FLAMEHOLDER FOR GAS TURBINE ENGINE

Louis J. Spadaccini, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 1, 1979, Ser. No. 16,759
Int. Cl.³ F02C 7/22
U.S. Cl. 60—749 **2 Claims**



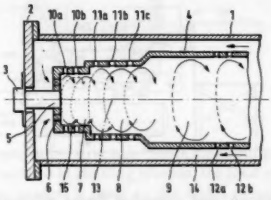
1. A flameholder for a burner for a gas turbine engine where the burner receives air from an airstream, said flameholder comprising a block-like element extending transverse to the airstream in proximity to where combustion ensues, a plurality of spaced axially extending apertures formed in said block-like element for passing air from said airstream therethrough, the diameters of said apertures are varied to form in each a converging section on the upstream end, a circular section on the downstream end, an adjacent diverging section and a throat section intermediate the converging and diverging sections relative to the airstream, cusps surrounding said apertures extending in a direction facing said airstream so that the apex thereof contacts said airstream first for precluding the formation of stagnation points in said diffuser section, said cusps having extending surfaces for removing heat from said block-like element, the downstream facing surface of said plate-like element being substantially planar and the circular sections of said apertures terminating therein for defining a web-like pattern wherein the discharging flow forms localized eddies for defining relatively small recirculating zones for stabilizing the flame formed adjacent thereto.

4,226,088

GAS TURBINE COMBUSTOR

Satoshi Tsukahara; Isao Sato; Yoshihiro Uchiyama, and Masanobu Kusaba, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 22, 1978, Ser. No. 880,109
Claims priority, application Japan, Feb. 23, 1977, 52-18116
Int. Cl.³ F02C 7/22
U.S. Cl. 60—752 **6 Claims**



1. A combustor for gas turbines comprising:
an outer housing having an end plate,
a combustion chamber disposed in said outer housing and including a first combustion section having an end member disposed near the end plate of said outer housing, a second combustion section having a larger diameter than that of the first combustion section and adjoining therewith, and a main combustion section having a larger diameter than that of the second combustion section and connected therewith,
an air passage formed between said outer housing and said cylindrical combustion chamber,
a plurality of primary air supply openings formed through a wall of the first combustion section, and defined so that air introduced into the first combustion section is in the range of about 25 to about 32% of the total amount of air supplied to said combustion chamber,
a swirl member provided at the end member of the first combustion section,
a nozzle member provided at the end plate of said outer housing extending into the first combustion section for supplying fuel to the first combustion section,
a plurality of secondary air supply openings formed through the wall of the second combustion section, and defined so that air introduced therethrough into the second combustion section as secondary air is in the range of about 38 to about 50% of the total amount of air supplied to said combustion chamber, and
a plurality of diluting air supply openings formed through a wall of the main combustion section of said combustion chamber, and defined so that air introduced therethrough into the main combustion section is in the range of below about 30% of the total amount of air supplied to said combustion chamber.

4,226,089

WASTE HEAT RECOVERY DEVICE

Billy E. Barrow, 2434 Funston St., Hollywood, Fla. 33020

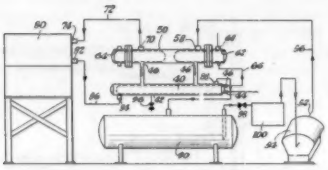
Filed Jun. 30, 1978, Ser. No. 920,791
Int. Cl.³ F25B 43/02, 7/00, 47/00, 27/02
U.S. Cl. 62—84 **3 Claims**

1. A method for using waste heat from a refrigeration system comprising the steps of:
(a) discharging superheated vaporized refrigerant from a refrigeration compressor into the shell side of a heat exchanger for use in raising the temperature of useful fluids;
(b) impinging said superheated vaporized refrigerant onto a plurality of tube bundles disposed within said heat exchanger thus transferring heat from said superheated vaporized refrigerant into useful liquids being transported through said tube bundles causing said liquids to increase

in temperature and said superheated vaporized refrigerant to become desuperheated vaporized refrigerant,

(c) discharging said desuperheated vaporized refrigerant into an evaporative condensor for condensation of said vapor into a liquid;

(d) moving said liquid refrigerant through an expansion means for decreasing the pressure of said liquid refrigerant;



(e) moving said expanded liquid refrigerant through an evaporator for transferring heat from a space to be cooled to said refrigerant for further useful purposes in heating fluids; and

(f) removing oil from said shell side of said heat exchanger that has separated out from said superheated vaporized refrigerant during desuperheating.

4,226,090

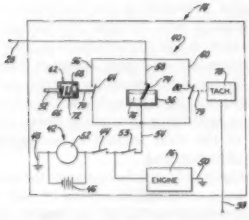
CONTROL SYSTEM FOR VEHICLE AIR CONDITIONER

James G. Horian, 7340 Indiana, Dearborn, Mich. 48126

Filed Aug. 6, 1979, Ser. No. 64,324

Int. Cl.[3] B60H *3/04*

U.S. Cl. 62—133 **1 Claim**



1. For use with a vehicle including an internal combustion engine and an air conditioner having a compressor driven by the engine, a control system for the compressor of the air conditioner comprising: an electrical control circuit including first, second, and third branch circuits for selectively operating the air conditioner compressor to provide cooling of the vehicle; the first branch circuit including a vacuum sensor for sensing the intake manifold vacuum of the engine to automatically suspend operation of the air conditioner compressor whenever the intake manifold vacuum is below a predetermined extent; the second branch circuit including a temperature switch for sensing the engine operating temperature to maintain the compressor operation during engine warmup even when the intake manifold vacuum falls below the predetermined extent; and the third branch circuit including a tachometer for sensing vehicle speed to maintain the compressor operation whenever the speed sensed is above a predetermined value even when the intake manifold vacuum is below the predetermined extent.

4,226,091

HEAT PUMP CONTAINING A PISTON COMPRESSOR AND DRIVEN BY A PISTON ENGINE

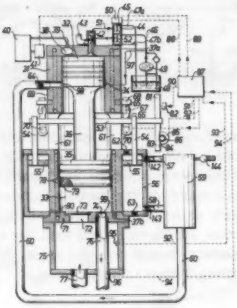
Jan-Erik A. Nowacki, Hölö, Sweden, assignor to Studsvik Energiteknik AB, Nykoping, Sweden

Filed Apr. 17, 1979, Ser. No. 30,892

Claims priority, application Sweden, Apr. 26, 1978, 7804805

Int. Cl.[3] F25B *27/00, 27/02, 13/00*

U.S. Cl. 62—323 **15 Claims**



1. A heat pump containing a piston compressor driven by a piston engine, in which the cylinder (**33**) of the compressor communicates with the condensor of the heat pump via a high pressure refrigerant conduit (**76**), and communicates with the evaporator of the heat pump via a low pressure refrigerant conduit (**77**), characterized in that an accumulator chamber (**75**) for low pressure refrigerant is provided in the low pressure refrigerant conduit (**77**) adjacent the cylinder (**33**) of the compressor, the low pressure refrigerant in said accumulator chamber (**75**) driving the compressor piston (**35**) and the engine piston (**34**) during the compression stroke of the engine, the volume of said accumulator chamber (**75**) being of such magnitude that the compressor piston (**35**) and the engine piston (**34**) are given a sufficiently high speed to produce the compression in the engine cylinder (**32**).

4,226,092

DEVICE FOR COOLING HEATED TEXTILE YARNS OF THERMOPLASTIC MATERIAL

Walter Lüthi, Ebnat-kappel, Switzerland, assignor to Heberlein Maschinenfabrik AG, Wattwil, Switzerland

Filed Jan. 23, 1979, Ser. No. 5,853

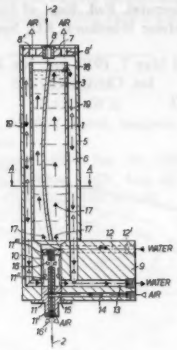
Claims priority, application Switzerland, Jan. 25, 1978, 783/78

Int. Cl.[3] F25D *17/02*

U.S. Cl. 62—374 **3 Claims**

1. A device for cooling rotating heated textile yarns of thermoplastic material, comprising a coolant pipe having a yarn inlet and a yarn outlet through which yarn can be passed lengthwise in a single run, means for passing cooling liquid into said pipe, a plate presenting a convexly curved surface to deflect the yarn from the direct flow path between the yarn inlet and yarn outlet, said plate being located in said pipe and extending substantially the entire length of said pipe, a jacket enclosing said pipe, a cover on said jacket which defines a yarn inlet, a supporting member at the exit end of said pipe which

defines a bore aligned with said pipe, a removable sealing member positioned in said bore and having a yarn outlet, a



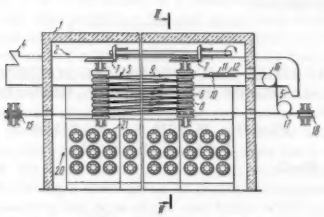
coolant inlet and a coolant outlet, and a gas inlet connected to an inlet in said sealing member.

4,226,093

RAPID-FREEZING APPARATUS FOR FOOD PRODUCTS

Andrei M. Voitko, Studencheskaya ulitsa, 12, korpus 1, kv. 64, Kishinev, U.S.S.R.

Filed Jan. 19, 1979, Ser. No. 4,836
Claims priority, application U.S.S.R., Feb. 1, 1978, 2576361
Int. Cl.³ F25D *25/02*
U.S. Cl. 62—381 **4 Claims**



1. A rapid-freezing apparatus for food products, comprising a refrigeration chamber, conveying means for partly prepared and ready-made food products accommodated in said refrigeration chamber and including a multi-level conveyer comprising at least two rotatable vertical supports, a flexible traction member running about said rotatable vertical supports, a helical monorail extending about said rotatable vertical supports encompassed by said flexible traction member, a plurality of screen trays attached to said flexible traction member, said screen trays having rollers engaging said helical monorail for motion therealong, an air cooler, and a fan adapted for circulating the air passed through said air cooler through said refrigeration chamber.

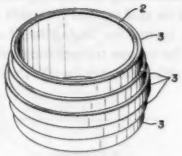
4,226,094

FINGER RING

Sharon A. Wolpoff, 12000 Old Georgetown Rd., Rockville, Md. 20852

Filed Jun. 7, 1978, Ser. No. 913,410
Int. Cl.³ A44C *9/00*
U.S. Cl. 63—15.4 **4 Claims**

1. A finger ring comprising an inner annular section and a plurality of at least three outer annular sections; said inner annular section provided with mounting threads extending over its outer peripheral surface; said outer annular sections having at least two different outer diameters relative to each other and each provided with mounting threads extending over its inner peripheral surface, the width of each outer annular section being substantially less than the width of the inner annular section such that when said outer annular sections are removably attached from an end of said inner annular section



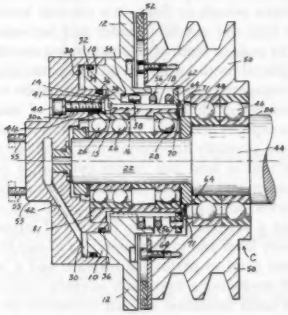
to form a composite outer structure comprising said plurality of outer annular sections in abutting relation, the total width of said outer annular section is equal to the width of said inner annular section such that the mounting threads of said inner annular section are covered and no portion of the inner peripheral surface of any of the said outer annular sections will be in direct contact with the wearer's finger.

4,226,095

MECHANISM FOR MAINTAINING CONTACT BETWEEN THE DRIVING SIDE OF TORQUE TRANSFERING SURFACES OF A FIRST ROTATABLE MEMBER AND THE DRIVEN SIDE OF MATCHING TORQUE TRANSFERING SURFACES OF A SECOND ROTATABLE MEMBER

Philip I. Loken, Savage, Minn., assignor to Horton Manufacturing Company, Inc., Minneapolis, Minn.

Continuation of Ser. No. 802,378, Jun. 2, 1977, abandoned. This application Oct. 19, 1978, Ser. No. 952,659
Int. Cl.³ F16D *3/14*
U.S. Cl. 64—27 CT **3 Claims**



1. A mechanism for maintaining contact between the driving side of the torque transmitting surfaces of a first rotatable member against the driven side of matching torque transmitting surfaces of a second rotatable member comprising:

(a) said first rotatable member having an axial hole with internal splines on the surface thereof forming torque transmitting surfaces,

(b) said second rotatable member having elongated splines extending axially on the outer surface thereof forming torque transmitting surfaces in engagement with said internal splines,

(c) a helical coil spring encircling said splines on said second rotatable member,

(d) means connecting one end of said coil spring to said first rotatable member,

(e) a washer having teeth formed on the internal edge thereof engageable with the splines of said second rotatable member,

(f) means connecting the other end of said coil spring to said washer,

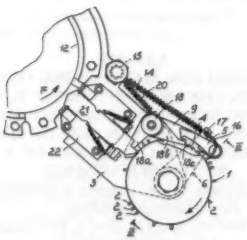
(g) means for preloading said spring including said washer freely rotated on said second rotatable member to torsionally load the spring for engagement of the teeth of the washer with the torque transmitting spline surfaces of said second rotatable member with the spring torsionally loaded.

4,226,096

PATTERN DRUM CONTROL DEVICE IN A CIRCULAR KNITTING MACHINE

Francesco Lonati, Brescia, Italy, assignor to Costruzioni Meccaniche Lonati S.p.A., Brescia, Italy

Filed Mar. 19, 1979, Ser. No. 21,535
Claims priority, application Italy, Mar. 24, 1978, 21613 A/78
Int. Cl.[2] D04B *15/74*
U.S. Cl. 66—224 **5 Claims**



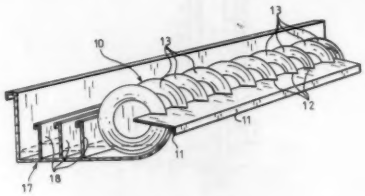
1. A device for controlling the advance movement of a patterning member, like a pattern drum or a number of superposed pattern wheels or disks, in a circular knitting machine having at least one needle cylinder and jack-selecting levers operated by pegs or teeth of said patterning member, comprising a peripheral tooth formation on said patterning member, a pawl for engagement with said tooth formation to cause stepwise advancement thereof about an axis of said patterning member, a support pivotable about said axis of said patterning member and pivotally supporting said pawl, an annular cam rigid with said at least one needle cylinder, a cam follower lever between said annular cam and said support, said cam follower lever being pivotally connected to said support, said cam having a peripheral profile capable of imparting to said cam follower lever and to said support a to-and-fro movement causing said pawl to perform a forward and a return stroke capable of producing a two-tooth advance movement of said peripheral tooth formation at each revolution of said at least one needle cylinder, wherein said profile comprises a first part extending over at least one quarter of a circle, preferably over half a circle, and adapted to cause a one-tooth advance movement of said tooth formation, and a second part having an appreciably greater inclination than said first part and following said first part, said second part being adapted to cause a further one-tooth advance movement of said tooth formation, and wherein said device further comprises means for detaching said pawl from said tooth formation over a half of each of a number of said return strokes, said pegs or teeth being arranged in vertical rows and said patterning member having at least two adjacent equal vertical rows of said pegs or teeth to consecutively act on said jack selecting levers during a two-tooth advance movement of said tooth formation.

4,226,097

DEVICE FOR APPLYING LIQUIDS ONTO A CONTINUOUSLY-RUNNING WEB

Heinz Rommel, Seevetal, Fed. Rep. of Germany, assignor to Artos Dr.-Ing Meier Windhorst KG, Seevetal, Fed. Rep. of Germany

Filed May 7, 1979, Ser. No. 36,956
Int. Cl.[3] D06B *1/06*
U.S. Cl. 68—205 R **13 Claims**



1. A device for applying treatment liquids onto continuously-fed textile webs of the type including a liquid-supply container, at least one roller which is partially immersed in the liquid in the liquid-supply container for removing liquid therefrom and a wiper which wipes the liquid off a surface of the roller for subsequent feeding onto the web of goods, the improvement comprising:

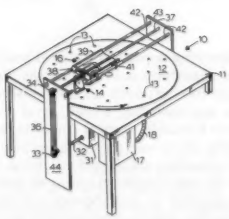
said at least one roller having a profiled surface and said wiper having a complementary-configured wiper edge which positively engages said profiled surface of said roller, said profiled surface defined by tooth-like wiping surfaces with each tooth-like surface having two opposed tapering tooth flanks which merge into a circumferential edge portion.

4,226,098

LEATHER YARN PRODUCING MACHINE

William M. Alexander, 1835 Elmwood Dr., Hillsborough, Calif. 94010

Filed Dec. 26, 1978, Ser. No. 973,443
Int. Cl.[3] C14B *00/00*
U.S. Cl. 69—2 **11 Claims**



1. A machine for producing leather yarn from a disc of leather, comprising:

a base;

a turntable supported by the base for rotation thereon, for receiving the leather disc on its exposed surface;

motor means for driving the turntable rotatably;

means associated with the turntable for creating a pressure differential between the upper side and the lower side of the leather disc when it is on the turntable, with the lower side being at lower pressure, so that the leather disc is caused to lie tightly against the turntable to thus be stiffened and to be driven with the turntable;

cutting means for cutting a yarn in a spiral pattern from the leather disc as the turntable rotates, and frame means

connected to the base for supporting the cutting means above the turntable; and

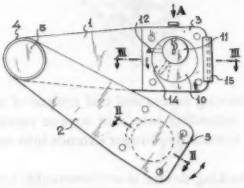
means for advancing the cutting means radially as the turntable rotates, so that the leather yarn is cut spirally from the disc.

4,226,099

PADLOCK

Francisco E. Garcia, Madrid, Spain, assignor to Patentes FAC, S.A., Madrid, Spain

Filed Aug. 3, 1978, Ser. No. 930,511
Claims priority, application Spain, Aug. 3, 1977, 461.328
Int. Cl.[2] E05B *67/08*
U.S. Cl. 70—41 **4 Claims**



1. A padlock designed for application in the locking of sliding doors with two panels that meet by their butt ends on vertical edges, and which are held fast to one another by the padlock itself, characterized essentially in that the said padlock is constituted of two flat bodies formed by a variable number of platens superimposed and joined with respect to one another by means of rivets in such a way that the said bodies have each an exterior quadrilateral zone at one end and are extended in convergent form to terminate in a semicircular shape at the opposite end, thus providing flat and lengthened bodies that are arranged according to parallel and spaced planes; provision having been made for the connection of the said bodies to be effected through the semicircular end zone of the said bodies by virtue of a shaft common to both, which shaft is fixed to one of the bodies the other body is mobile and rotates around the said shaft, the said mobile body having a cylindrical housing in its quadrangular zone or free end, which housing has a channel formed on the inner lateral surface of the said housing; the fixed body having a small group of platens corresponding to the end quadrangular zone of the said body, which group of small platens faces the housing of the mobile body; with the special feature that this group of small platens, as well as the fixed body have a common pass-through orifice in which a cylindrical lock body is situated, and by which said lock body element is perfectly aligned facing the said channel in the housing of the mobile body when the padlock is in the closed position and wherein the said cylindrical lock body is axially movable within the said pass-through orifice, so as to be engagable in the said channel of the movable arm.

4,226,100

WATERPROOF PADLOCK CASE

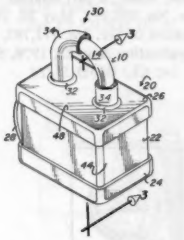
Marshall D. Hampton, 2125 S. Ammons, Lakewood, Colo. 80227, and Edwin L. Spangler, Jr., Denver, Colo., assignors to said Marshall D. Hampton, Lakewood, Colo., by said Edwin L. Spangler, Jr.

Filed Jan. 31, 1979, Ser. No. 8,065
Int. Cl.[3] E05B *67/38*
U.S. Cl. 70—51 **10 Claims**

1. In a protective cover for padlocks having a case with a keyway in one end and the legs of a U-shaped shackle entering the other:

a box-like housing having a case-encircling body open at both ends, a base detachably connected to the open end where the keyway is located providing access to the latter and a lid detachably connected to the other open end, said lid having shackle leg receiving openings therein positioned and adapted to pass the shackle legs;

a loose-fitting pliable tubular sleeve mounted on the shackle of a length such that the ends thereof terminate adjacent the shackle receiving openings in the lid when said shackle is closed and locked; and,



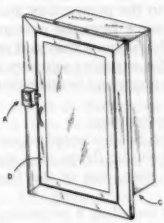
annular means encircling the shackle legs cooperating therewith and with the sleeve ends to define continuous fluid-tight seals around both shackle leg receiving openings in the lid.

4,226,101

CABINET LOCK WITH FRANGIBLE COVER PLATE AND PUSH BUTTON LOCK RELEASE AND ALTERNATIVE KEY RELEASE

Walter F. Lee, 250 Paisley La., Minneapolis, Minn. 55422

Filed Dec. 4, 1978, Ser. No. 965,924
Int. Cl.[2] E05B *65/44, 63/00;* E05C *3/02*
U.S. Cl. 70—78 **7 Claims**



1. A cabinet lock with frangible cover plate and lock release push plate comprising:

(a) a housing,

(b) a latch having receiving means,

(c) means mounting said latch for pivotal movement to a position in and out of said housing,

(d) a lock releasing push plate,

(e) means slidably mounting said push plate within said housing,

(f) first means urging said push plate away from said latch,

(g) means carried by said push plate for engagement with said receiving means of said latch for preventing said latch from pivotal movement outwardly of said housing,

(h) second means urging said latch pivotally into said housing when said engagement means of said push plate is disengaged from the receiving means of said latch by means of said push plate slidably pushed inwardly of said housing,

(i) a frangible plate carried by said housing and covering said push plate, and

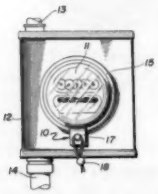
(j) said latch being pivotally secured in a position extending outwardly of the housing when said push plate is released and is urged away from said latch thereby engaging said

engagement means of said push plate into said receiving means of said latch.

4,226,102
METER LOCK

Albert Mattress, Jr., Spencer, Mass., assignor to Norman S. Blodgett, Worcester, Mass., a part interest

Continuation of Ser. No. 908,972, May 24, 1978, abandoned, which is a continuation of Ser. No. 771,757, Feb. 24, 1977, abandoned. This application Aug. 22, 1979, Ser. No. 68,586
Int. Cl.[3] B65D *55/14*
U.S. Cl. 70—164 **14 Claims**



11. Meter clamp, comprising:
(a) a band formed as a loop adapted to embrace an annular meter flange,
(b) a housing permanently attached to one end of the band, the housing being formed with an inner chamber and with a passage leading into it, the other end of the band being formed with an apertured tongue adapted to extend into the passage,
(c) a cam member located in the housing and forming a separate movable element within the housing, said cam member having a finger which is spring-biased to a position within the passage for engagement with the aperture in the tongue into the passageway and to prevent withdrawal of the tongue from the passage by virtue of the engagement of the finger within said aperture, and
(d) locking means for engaging said cam member at a point spaced from said finger and limiting movement of the cam member.

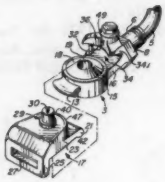
12. Meter clamp, comprising:
(a) a U-section loop band adapted to embrace an annular meter flange and similar flange on a meter box, the band having two free ends, one of the free ends having an aperture,
(b) retaining means including a projecting element that extends into said aperture for holding the free ends of the loop together to form a closed loop,
(c) a housing for shielding the retaining means, and
(d) locking means connected to the retaining means, said locking means comprising a key actuated locking pin that extends through the housing, the axis of the locking pin being transverse to the plane of the loop band.

4,226,103
LOCKING DEVICE FOR GLAD HAND BRAKE LINE COUPLERS

Ray M. Strickland, Box Dy 146, Cave Creek Stage, Phoenix, Ariz. 85020

Filed Sep. 5, 1978, Ser. No. 939,458
Int. Cl.[2] E05B *65/14*
U.S. Cl. 70—237 **7 Claims**

1. A locking device for locking engagement with a trailer brake line coupler having a tongue, a tongue-receiving recess and a seal with an air passage opening therein, said locking device comprising in combination:
a. a housing having a lower surface and an upper surface;
b. a tongue extending outward from said housing for insertion into said tongue-receiving recess of said brake line connector;
c. a flange attached to said housing extending outwardly from said lower surface, said flange having a tongue-receiving opening for receiving said tongue of said brake line connector; and
d. a lock mechanism mounted in said housing, said lock mechanism having an extendible plunger extendible outward from said lower surface into said air passage opening, said plunger being retractable by unlocking said locking device, said tongue of said housing extending into said

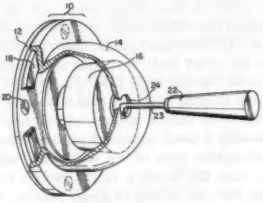


tongue-receiving recess and said tongue of said brake line connector extending into said tongue receiving opening when said extendible plunger extends into said air passage opening;
whereby, said locking device is not removable from said brake line coupler when said extendible plunger extends into said air passage opening without damaging said locking device and/or said brake line connector.

4,226,104
REMOVABLE PROTECTOR FOR LOCKS

Melvin D. Oliver, 4310 N. Carlisle St., Philadelphia, Pa. 19140

Filed Aug. 14, 1978, Ser. No. 933,457
Int. Cl.[2] E05B *17/14*
U.S. Cl. 70—455 **7 Claims**



1. A protective device to cover a locking mechanism installed in an openable construction member comprising,
a magnetically attractive base secured around the locking mechanism,
the base being permanently secured to the construction member; and
a rigid, removable housing overfitting the locking mechanism and comprising a magnetic portion for magnetically securing said housing to said base, the housing comprising an aperture, the said aperture being adapted to allow insertion of a separate tool to dislodge the housing from the base.

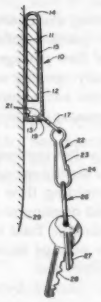
4,226,105
KEY RING HOLDER

Floyd L. Wehrman, Apt. 220, 8477 Regent Ave. North, Minneapolis, Minn. 55443

Filed May 11, 1978, Ser. No. 904,856
Int. Cl.[2] A44B *15/00*
U.S. Cl. 70—456 R **5 Claims**

1. A key ring holder comprising:
an elongated closed loop member designed to have a belt passed therethrough for support of said loop member by

the belt and which can be withdrawn from the belt only by longitudinal movement thereof off of the end of the belt; said loop member having inner and outer walls joined by top and bottom walls and spaced apart sufficiently to accommodate a belt therebetween and of a length sufficiently great to provide for the full width of such a belt within said loop member, said outer wall of said loop member diverging outwardly from said inner wall from top to bottom;



an eye member having a shank extending along and secured to the bottom of said loop member and an eye portion, said eye portion extending outwardly from said shank in such a manner to extend outwardly and downwardly from the outer wall of said loop member with the entire eye portion being disposed beyond said outer wall;

and a spring hook suspended from the outer lowermost portion of said eye member so as to be spaced transversely from the inner wall of said loop member and hence from the body of the wearer, said spring hook being adapted to receive a key ring upon yieldable opening of said hook.

4,226,106

PLANTS FOR TREATING ROLLED STEEL PRODUCTS

Mario Economopoulos, Liege, and Jean Y. Respen, Herstal, both of Belgium, assignors to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie, Brussels, Belgium

Continuation of Ser. No. 646,426, Jan. 5, 1976, abandoned. This application Mar. 6, 1978, Ser. No. 883,848

Claims priority, application Belgium, Jan. 3, 1975, 824100; Feb. 28, 1975, 826199

Int. Cl.³ B21B *45/02*

U.S. Cl. 72—39 **10 Claims**

1. A plant for treating a rolled steel product, comprising, in combination with a rolling mill, in sequence, a quenching apparatus through which the rolled steel product passes from the outlet of the rolling mill, and a still-air cooling area, the quenching apparatus having a series of cooling means for directing cooling liquid onto the rolled product passing through the quenching apparatus, the plant further comprising liquid removal means including only liquid means for completely removing the cooling liquid from the rolled product, the liquid removal means being located after each of the cooling means, and cutting means for cutting the product between the quenching apparatus and the still-air cooling area, the cooling means comprising at least two ducts spaced apart one after the other on a common axis, an enlarged extension enveloping the annular passage defined between the ends of the two ducts spaced from one another, and means for supplying fluid under pressure to the annular passage.

4,226,107

DEVICE FOR EDGING THE POINTS OF BALL PENS IN PARTICULAR THOSE MADE OF HARD MATERIAL

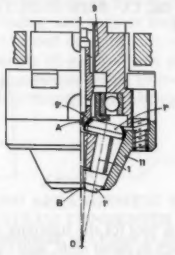
Ugo Buzzi, Arzo, Switzerland, assignor to Albe SA, Agno, Switzerland

Filed Nov. 21, 1978, Ser. No. 963,920

Claims priority, application Switzerland, Nov. 29, 1977, 14634/77; Oct. 13, 1978, 10614/78

Int. Cl.³ B21D *19/06*

U.S. Cl. 72—121 **7 Claims**



1. A device for edging the point of a ball point pen comprising three working rollers arranged to run without slip on a conical running surface and arranged at 120° angular spacing so that regions of the rollers cooperate to define a working zone into which the point is moved to be engaged by said regions, the axes of the three rollers converging at the apex of said conical surface, a stationary shaft having a tapered end, resiliently yieldable means urging said tapered end towards the rollers, and ball or roller bearing means rotatably supporting said conical surface.

4,226,108

APPARATUS FOR COOLING METAL PRODUCTS

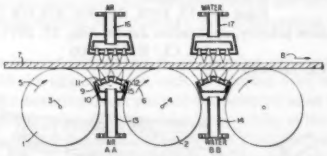
Stephan H. Wilmotte, Ninane, Chaudfontaine; Jean A. Nautet, Hony-Esneux, and Marios Economopoulos, Liege, all of Belgium, assignors to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie, Brussels, Belgium

Filed Feb. 8, 1978, Ser. No. 875,981

Claims priority, application Belgium, Feb. 11, 1977, 851381; Feb. 11, 1977, 851382; Sep. 5, 1977, 858416

Int. Cl.² B21B *27/10, 45/02*

U.S. Cl. 72—201 **10 Claims**



1. Apparatus for cooling a metal product by spraying a coolant towards a surface of the product, the product surface traveling along a given path, the apparatus comprising two hollow caissons arranged one inside the other and rigidly connected together to constitute a unit having a front face, the front face being in spaced relation to said product surface, the front face extending across said path, each caisson having a plurality of holes in a wall of the front face facing said surface, each hole of the outer caisson being paired with a hole of the inner caisson, the pair of holes being in coaxial alignment and a coolant sprayer for directing coolant onto the traveling product surface being fixed in each pair of holes, said apparatus further comprising means defining the said path of the product surface, and means for supplying a cooling fluid to each caisson, each sprayer communicating with both caissons, whereby

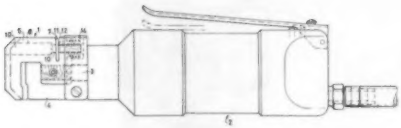
said coolant is emittable as a fluid spray whose density can be kept uniform between said front face and said product surface.

4,226,109

TOOL FOR THE STAMPING OF HOLES OR THE LIKE IN SHEET MATERIAL SUCH AS METAL PLATE

Sven R. Nilsson, Lövstigen, Sweden, assignor to Lindova Aktiebolag, Lindesberg, Sweden

Filed Oct. 13, 1978, Ser. No. 951,041
Claims priority, application Sweden, Oct. 13, 1977, 7711530
Int. Cl.³ B21D *28/26, 31/06*
U.S. Cl. 72—412 **7 Claims**



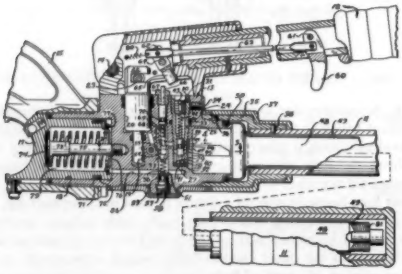
1. (Amended) A tool for the stamping of holes or the like in sheet material, such as metal plate, said tool being intended for use in combination with a [pneumatic or hydraulic] *fluid actuated* piston and cylinder motor, preferably with a motor which can be held in the hand, and is comprised of a stationary part which is supported against the motor cylinder and a displaceable part which can be connected to the piston of the motor, characterized in that the displaceable tool part is provided with at least one slot at right angles to the direction of the stroke of the motor, in which the metal plate is insertable *into engagement with a base thereof,* and a through drilling which extends through the slot at right angles to same and at a distance from its base, the portion of the drilling *on the side of said slot remote from* [turned away from] said motor being formed as a stamping die and [a] *the* portion thereof [turned towards the motor] *between said slot and said motor* being formed to accommodate an axially displaceable plunger, the inwardly turned end of which abuts against the stationary tool part in such a manner that the plunger, upon displacement of the [engine] piston away from the tool is forced into and through the metal plate therein.

4,226,110

HYDRAULIC COMPRESSION TOOL

Yasuo Suganuma, Nagano, Japan, assignor to Izumi Products Company, Matsumoto, Japan

Filed Jul. 17, 1978, Ser. No. 925,416
Claims priority, application Japan, Aug. 22, 1977, 52/112747
Int. Cl.³ B21D *7/06*
U.S. Cl. 72—416 **5 Claims**



1. In a hydraulic compression tool for compressing a connector onto a wire end, said tool including a pair of complementary compression dies, means defining a reservoir for holding a supply of hydraulic fluid, a hydraulic force applying means for forcibly urging the dies toward a compressing disposition, a hydraulic pump for delivering hydraulic fluid from said supply under pressure to said force applying means to effect a compressing operation, means for selectively returning hydraulic fluid from said force applying means to said reservoir to release said dies subsequent to a compression operation, means defining a relief flow passage from said force applying means, and body means defining a cavity communicating with said relief flow passage and said reservoir, the improvement comprising:

a two-piece housing removably installed in said cavity including a first portion defining an inlet communicating with said relief flow passage, and a second portion defining an outwardly opening annular outlet communicating with the reservoir and a plurality of diametrically opposed radial outlet passages opening through said housing to said annular outlet;

a pressure relief valve removably installed in said housing and including a biasing spring for controlledly closing said inlet while permitting flow of said hydraulic fluid from said inlet to said opening to the reservoir when the pressure of the hydraulic fluid in said force applying means and relief flow passage exceeds a preselected maximum operating pressure; and

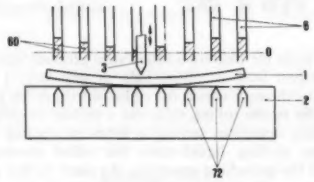
release means for passing hydraulic fluid from said force applying means to said annular outlet for return to said reservoir to release said dies, and concurrently directing fluid pressure from said force applying means through said radial outlet passages as an incident of said passing of the hydraulic fluid, said radial outlet passages providing balanced flow of hydraulic fluid about the relief valve in said housing outwardly through said outlet passages and annular outlet to said reservoir when said pressure exceeds said maximum operating pressure and said radial outlet passages providing balanced inwardly directed pressure forces radially against said relief valve in said housing while concurrently permitting said biasing spring to have an increased biasing action against the valve when said release means is operated to release said dies so as to permit a series of finite centering actions as a result of a series of pressure buildup and pressure relief cycles.

4,226,111

METHOD AND APPARATUS FOR THE SURFACE WORKING AND FOR REWORKING OF WORKPIECES

Marcel Wahli, Glattalstrasse 844, Rümlang-Zürich, Switzerland

Filed Oct. 10, 1978, Ser. No. 949,984
Claims priority, application Switzerland, Oct. 11, 1977, 12386/77
Int. Cl.³ B21J *5/00*
U.S. Cl. 72—437 **8 Claims**



1. Apparatus for reworking of elongate workpieces, comprising:

an upstanding column;

a strike hammer device movably and adjustably arranged on said column and including at least one strike bolt having a curved point and movable with said strike hammer device for rapidly and repetitively striking a workpiece;

a rigid comparison measuring table for supporting the work-

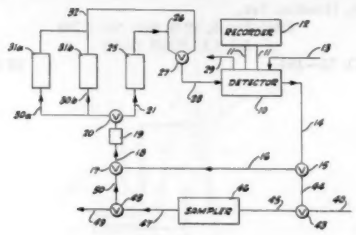
piece in the path of the strike bolt, said table including at least one backing surface for supporting the workpiece and against which the workpiece is to be deformed by repetitive striking of the workpiece by said strike bolt, said backing surface corresponding to the undistorted shape of the workpiece, means defining a plurality of air channels discharging through said backing surface, said air channels opening through said backing surface in an aligned manner and at substantially equal distances from each other, means for maintaining each air channel under pneumatic pressure and indicating devices connected to said air channels to indicate the air pressure drop as air exits from the respective channels.

4,226,112

METHOD AND APPARATUS FOR ANALYZING GASES

Gomidas Jibelian, 740 Fawn Dr., San Anselmo, Calif. 94960

Filed Jan. 30, 1978, Ser. No. 873,617
Int. Cl.³ G01N *31/08*
U.S. Cl. 73—23.1 **6 Claims**



1. In a chromatograph apparatus of the type comprising:

(1) At least one body of adsorptive material, each such body having an inlet and an outlet, and each having the properties of adsorbing one or more components of a gaseous mixture to be analyzed, of allowing one or more of the adsorbed components to be eluted by passage of an inert carrier gas through the body and, where two or more gaseous components are to be adsorbed by and eluted from a single body, of causing elution of such components in time ordered sequence such that the eluted components are not commingled in the gas leaving the outlet of such body,

(2) a detector having a test conductor, a reference conductor, an electrical circuit including said conductors, said circuit having a nil output when said conductors are at the same temperature and having an output when the conductors are at different temperatures which is proportional to the difference in temperatures, said conductors being sensitive to the thermal conductivity of a gas in contact therewith, said detector having a first gas inlet and a first gas outlet for conducting carrier gas into, through and out of the detector in thermal contact with the reference conductor; said detector also having a second inlet and a second outlet for conducting gas into, through and out of the detector in thermal contact with the test conductor, the improvement which comprises:

(a) a first gas circuit connecting the first detector outlet with the second detector inlet, said circuit including as a portion thereof said body or bodies of adsorptive material by way of the inlet and outlet of each,

(b) a second gas circuit having an inlet end and an outlet end and which is parallel to a portion of said first gas circuit, said second circuit being connected as its inlet end to the first circuit by a first valve means and being connected at its outlet end to the first circuit by a second valve means, said second gas circuit including a sampler element for receiving a predetermined volume of gas to be analyzed, said second gas circuit being located upstream in relation to said body or bodies,

(c) valve operating means for said valve means operable automatically to carry out the following cycle of operation:

(i) acting initially to route carrier gas solely through the first gas circuit from the first detector outlet to the second detector inlet,

(ii) then acting upon commencement of analysis to route carrier gas from the first detector outlet through said first valve means to said second gas circuit to propel said sample of gas from the sampler though said second valve means, thence through the remainder of said first gas circuit including said body or bodies of adsorptive material to the second detector inlet, and

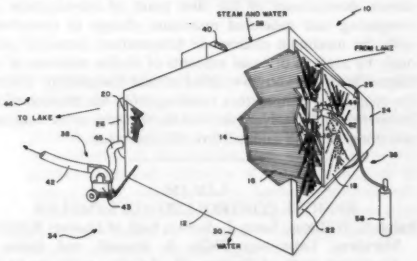
(iii) after said sample of gas has been propelled beyond said second valve means, acting to re-establish flow of carrier gas solely through said first circuit.

4,226,113

LEAK DETECTING ARRANGEMENT ESPECIALLY SUITABLE FOR A STEAM CONDENSER AND METHOD

Charles A. Pelletier, Bethesda, and Edgar D. Barefoot, Gaithersburg, both of Md., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Apr. 11, 1979, Ser. No. 29,707
Int. Cl.³ G01M *3/22*
U.S. Cl. 73—40.7 **13 Claims**



1. An arrangement for detecting leaks in a plurality of discrete tubes which have opposite adjacent open ends and which form part of a given apparatus also having an inner chamber surrounding said tubes such that the open ends of the latter are accessible from outside said chamber, said arrangement comprising:

(a) means located outside said inner chamber and cooperating with the adjacent open ends of selected ones of said tubes for directing tracer gas into said selected tubes at the cooperating adjacent ends of the latter while, at the same time, isolating said adjacent open ends from the ambient surroundings so as to prevent any tracer gas from escaping into the ambient surroundings including said inner chamber as the tracer gas is directed into said tubes;

(b) means for drawing said tracer gas through said selected tubes from said cooperating adjacent ends to opposite adjacent ends thereof such that, if any of said selected tubes have leaks, a portion of said gas will escape into said chamber through said leaks before reaching said opposite ends;

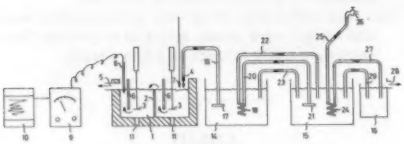
(c) means cooperating with said opposite adjacent ends of said selected tubes for capturing all of the tracer gas reaching said opposite ends and directing the captured tracer gas to a remote location; and

(d) means for drawing said escaping gas, if any, to a predetermined detection point and detecting the gas at said point, whereby to indicate the presence of a leak.

4,226,114
METHOD AND APPARATUS FOR ANALYSIS OF SUBSTANCES BY CHANGE IN ENTHALPY DURING DISSOLUTION

Fritz Hagedorn, Sehnde, Fed. Rep. of Germany, assignor to Kali-Chemie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Mar. 16, 1979, Ser. No. 21,140
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811945
Int. Cl.³ G01N *25/48*
U.S. Cl. 73—61 R **24 Claims**

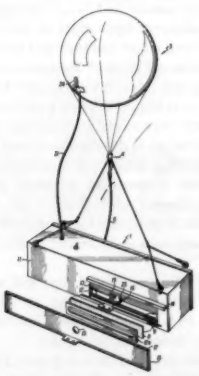


1. A method for the analysis of a mixture of solid substances comprising at least one soluble component which dissolves with a change in enthalpy, comprising the steps of introducing at a first point a predetermined amount of the mixture of substances in solid form into a uniformly flowing stream of a solvent for the soluble component maintained at a constant temperature; measuring the maximum change of temperature occurring in the stream of solvent at a second point in the stream downstream of the first point of introduction; and comparing said measured maximum change in temperature with the maximum changes in temperature measured previously by analysis of equal amounts of similar mixtures of substances having a known content of said component, whereby the changes in temperature resulting from the solution of said component in the solvent serve as the measure of the content of said component in said mixture of substances.

4,226,115
REMOTE CONTROLLED AIR SAMPLER

Ralph E. Williams; Larry L. Brown, both of Denver; Robert P. Marchese, Lakewood; Philip A. Russell, and James A. Armstrong, both of Denver, all of Colo., assignors to The United States of America as represented by the Administrator of the United States Environmental Protection Agency, Washington, D.C.

Filed Jun. 30, 1978, Ser. No. 920,944
Int. Cl.³ G01W *1/08*; G01N *15/06*
U.S. Cl. 73—28 **12 Claims**



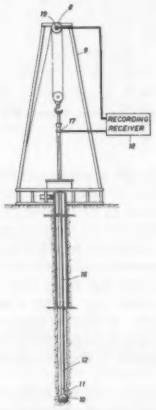
1. A remote controlled air sampler comprising:

(a) a housing having a wall with an elongated aperture,
(b) an air filter strip more extensive than said aperture mounted over said aperture,
(c) a guide means mounted within said housing,
(d) a suction head within said housing movably engaged to said guide means for sucking a sample of air through a portion of said air filter strip,
(e) a suction head translating means operatively engaged to said suction head for translating said suction head along said guide means;
(f) an air pump in fluid communication with said suction head for drawing a sample of air through said suction head, and
(g) a radio operated, remote control means for selectively actuating said suction head translating means and said air pump in response to radio signals, whereby an air sample is drawn through a portion of said air filter means.

4,226,116
LOGGING WHILE RAISING A DRILL STRING

Early B. Denison, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 8, 1979, Ser. No. 1,798
Int. Cl.² E21B *49/00*
U.S. Cl. 73—151 **10 Claims**



1. A process for drilling and logging a downwardly extending well borehole comprising:

drilling the borehole with a signal transmissive drill string which contains a magnitude-responsive transducer which, during the drilling, is kept at least substantially within the external confines of the drill string;

movably-mounting said transducer within a lower portion of the drill string and mechanically connecting it to a motion-imparting means which is capable of being actuated by a command signal transmitted along the drill string to urge the transducer toward or away from an extended position at least substantially in contact with the wall of a borehole drilled by the drill string or a retracted position at least substantially within the exterior confines of the drill string;

stopping the drill string and transmitting along it a command signal that initiates the urging of the magnitude-responsive transducer toward its extended position;

raising the drill string while transmitting along it a signal indicative of the magnitude at which a subterranean physical or chemical property is encountered by the magnitude-responsive transducer while it is in contact with, or in close proximity to, the borehole wall;

operating a movement-responsive transducer to provide a

signal indicative of the distance by which the drill string is raised;

providing a record of the variation with depth in said subterranean property; and,

stopping the drill string and transmitting along it a command signal that initiates the urging of the magnitude-responsive transducer toward its retracted position.

4,226,117

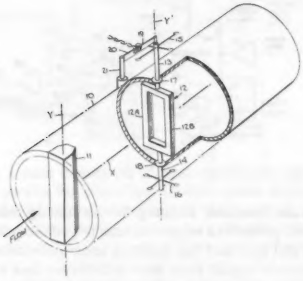
VORTEX-SHEDDING FLOWMETER HAVING DRAG-ACTUATED TORSIONAL SENSOR

Peter J. Herzl, Morrisville, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

Continuation-in-part of Ser. No. 944,624, Sep. 21, 1978, Pat. No. 4,181,020. This application Feb. 21, 1979, Ser. No. 13,557

Int. Cl.³ G01F *1/32*

U.S. Cl. 73—861.22 **17 Claims**



1. A vortex-shedding flowmeter comprising:

A. a flow tube through which a fluid stream to be metered is conducted, said tube having a longitudinal axis;

B. a shedder having a predetermined geometry transversely disposed in said tube to divide the fluid stream therein and to cause vortices to be shed alternately on either edge thereof at a repetition rate proportional to the flow rate of the fluid;

C. a torsionally-supported sensor disposed in said tube behind the shedder to define a gap therewith and provided with a pair of relatively broad parallel legs separated by a passage, the legs being symmetrically disposed with respect to a central fulcrum axis which is normal to said tube axis, the divided fluid stream flowing past the shedder producing downstream trains of vortices which travel along the right and left sides of the tube on either side of the sensor, thereby developing a stagnant zone in said gap that is caused by the alternately shed vortices to be alternately drawn in front of each leg whereby fluid from the stream is caused to flow against the other leg and then through said passage to create a torque about said fulcrum axis alternately in the clockwise and counterclockwise direction to cause the sensor to oscillate at a frequency proportional to the flow rate of the fluid stream; and

D. transducer means operatively coupled to said oscillating sensor to produce a corresponding electrical signal.

4,226,118

LEVEL DETECTOR

Joe L. Aldrich, Kingwood, Tex., assignor to Keystone International, Inc., Houston, Tex.

Filed Jul. 28, 1978, Ser. No. 928,820

Int. Cl.³ G01F *23/28*

U.S. Cl. 73—290 V **42 Claims**

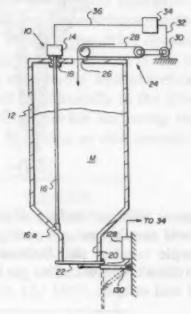
1. Apparatus for measuring a variable quality or quantity of matter present within a sensing area comprising:

(a) signal generation means including first oscillator means for providing an oscillatory signal, and including sensitivity control means for selectively adjusting the sensitivity of said signal generation means;

(b) antenna probe means, as part of said signal generation means, for extending in said sensing area and for receiving said oscillatory signal whereby the frequency of said oscillatory signal is varied in accordance with the modification of impedance of said antenna probe means due to the exposure of said antenna probe means to matter within said sensing area;

(c) electrical processing means for receiving said oscillatory signal and for producing an output signal whose frequency varies as the extent of the antenna probe means so exposed to material within said sensing area; and

(d) test circuit means, as part of said electrical processing means, for receiving said output signal and providing a



test output indicative of the value of said output signal frequency, including

(i) counter means for receiving said output signal and for providing, as said test output, counter signals, initiated in sequence, of frequencies that are, progressively, smaller fractional multiples of the frequency of the output signal, wherein a zero output signal frequency results in no oscillatory counter signals being provided;

(ii) indicator means for separately signaling the production of each such counter signal; and

(iii) timing means for periodically providing a reset signal to said counter means to define a time span during which said counter means may so produce said counter signals in sequence, said counter means thereafter initiating a subsequent time span for producing counter signals.

4,226,119

SAMPLE INTRODUCTION SYSTEM

Hansueli Buser, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 30, 1978, Ser. No. 956,114

Claims priority, application Switzerland, Nov. 3, 1977, 13390/77; Nov. 25, 1977, 14480/77

Int. Cl.³ G01N *1/28*

U.S. Cl. 73—422 GC **11 Claims**

1. A sample introduction system for a gas chromatograph comprising:

(a) a chamber;

(b) a lock on said chamber;

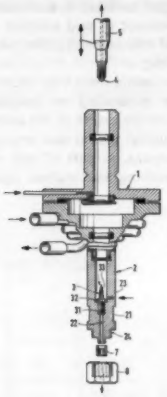
(c) an inlet for introducing carrier gas to said chamber;

(d) a separating column;

(e) a needle mounted in said chamber, said needle having a conical top part which converges upwards to a point, a bottom part having surfaces which converge upwards towards said top part and wherein the generatrices of the bottom part are at a smaller angle to the needle axis than the generatrix of the top part, and a passage extending from said bottom part up through said top part to emerge

at an opening in the surface thereof, said bottom part having a bore to receive said separating column and communicating directly with said passageway; and

(f) a sample holder mounted to introduce a sample via said lock into said chamber and onto said needle in sealing



engagement with the surface of said top part, the bottom part of said needle having a configuration such that when said sample reaches said bottom part a gap is formed therebetween to allow carrier gas introduced via said inlet to enter said sample.

4,226,120

ANALOG ACCELEROMETER

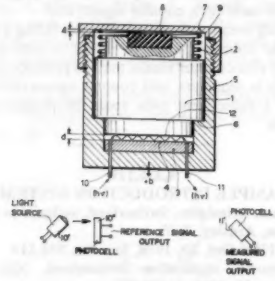
Norbert Nissl, Aresing, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Oct. 19, 1978, Ser. No. 952,653

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1977, 2748173

Int. Cl.³ G01P *15/08*

U.S. Cl. 73—517 R **18 Claims**



1. An apparatus for measuring acceleration, comprising housing means, inertia mass means, spring means movably locating said inertia mass means in said housing means for responding to an acceleration force, force measuring means responsive to movements of said inertia mass means, said force measuring means comprising first and second light reflecting surface means arranged to form a gap of variable width between said first and second light reflecting surface means, at least one of said reflecting surface means being operatively associated with said inertia mass means so that said gap is varied in its width in response to said acceleration force acting on said inertia mass means; said apparatus further comprising light source means, light input means for introducing light from said light source means into said gap, light output means operatively connected to said gap, light receiving means arranged to exclusively receive light from said light output means after repeated reflections in said gap, whereby the change in intensity of the light emanating, after said repeated reflections, from said gap through said light output means and entering said light receiving means represents a measurement of said acceleration.

4,226,121

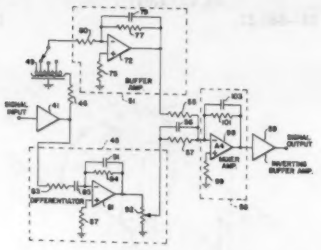
ULTRASONIC IMAGING SYSTEM AND IMPROVED SIGNAL PROCESSOR THEREFOR

William M. Knospler, Fenwick Rd., Rte. 206, Augusta, N.J. 07822

Filed Mar. 2, 1979, Ser. No. 16,873

Int. Cl.² G01N *29/04*

U.S. Cl. 73—602 **11 Claims**



8. In an ultrasonic imaging device having means to apply ultrasonic pulses to a subject to scan impedance changes in said subject and to detect the resulting sonic reflections and generate electrical signal from said reflections, and a receiver to demodulate the received signals, and an image storage device to store an image of the acoustic impedance changes represented by said electrical signals, the improvement wherein there is provided differentiating means to differentiate the output signal of said receiver to provide a differential signal and summation means to add said differential signal to a representation of the output signal of said receiver to provide a summation signal, and means to apply said summation signal to said image storage device to provide said image of said acoustic impedance changes.

4,226,122

APPARATUS FOR RECORDING ECHO PULSES

Svend A. Lund, Birkerod; Sven E. Iversen, Charlottenlund; Carl E. T. Petersen, Skovlunde; Erik T. Bogen, Dastrup, Viby SJ., and Jorgen Dam, Herlev, all of Denmark, assignors to Akademiet for de Tekniske Videnskaber, Svejsecentralen, Glostrup, Denmark

Filed Jun. 27, 1978, Ser. No. 919,602

Claims priority, application Denmark, Jul. 1, 1977, 2961/77

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—609 **9 Claims**

1. An apparatus for recording projection pictures of internal inhomogeneities in otherwise homogenous objects having a substantially plane or slightly curved surface on projection planes perpendicular to each other, the apparatus recording projection pictures by ultrasonic inspection according to the pulse-echo method, said apparatus comprising:

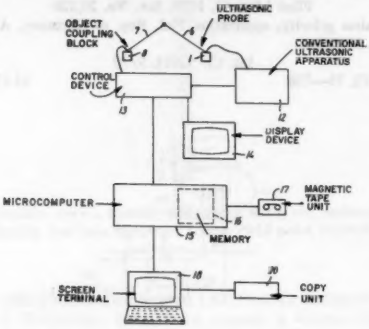
ultrasonic inspection means having at least one ultrasonic angle probe for emitting and receiving ultrasonic sound pulses, said ultrasonic angle probe being freely movable in a two dimensional scanning movement over the surface of the object;

position signal producing means for producing position signals containing information on the position of said ultrasonic angle probe and the direction of the projection of the ultrasonic sound pulses on the surface of the object;

coordinate signal producing means responsive to echo pulses received from reflecting points in the object for produc-

ing, on the basis of the position signals and the transit time of the ultrasonic sound pulses, coordinate signals containing information on the spatial coordinates of the reflecting points in the object causing the echo pulses;

memory means for storing echo pulse amplitudes, said memory means having a storage area for each of the perpendicular projection planes, said storage area having at least one storage position for each projection on the projection plane of reflecting points in the object; and



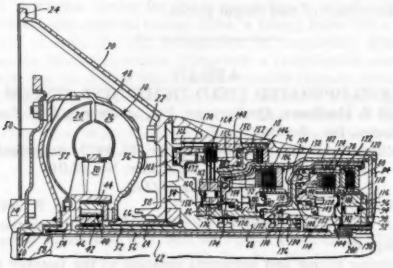
recording means connected to said coordinate signal producing means for recording an echo pulse amplitude in each of said storage positions of said memory means, wherein said recording means records the echo pulse amplitude in at least one of said storage positions determined by the coordinate signals from said coordinate signal producing means if the echo pulse amplitude is higher than the last echo pulse amplitude recorded in said storage position.

4,226,123

NON-SYNCHRONOUS FOUR SPEED AUTOMATIC TRANSMISSION WITH OVERDRIVE

Howard L. Croswhite, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 6, 1978, Ser. No. 966,975
Int. Cl.[2] F16H *57/10*
U.S. Cl. 74—688 **4 Claims**



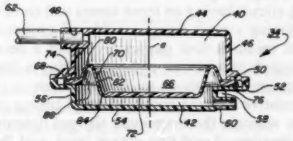
1. A multiple ratio power transmission mechanism including four forward driving ratios and a single reverse ratio, the fourth overdriving ratio being an overdrive and the third forward driving ratio being a direct drive, compound planetary gearing including a pair of sun gears of differential diameter, a ring gear and a compound planet pinion assembly including a first planet set engageable with the larger sun gear and a second planet set engageable with the smaller sun gear, a ring gear engageable with the first planet set, said planet sets being engageable with each other and being supported on a common carrier, a driven member connected to said ring gear, a hydrokinetic unit including a bladed impeller and a bladed turbine, a driving member connected to said impeller, a forward driving clutch assembly comprising a first selectively engageable friction clutch and an overrunning coupling means arranged in series relationship for connecting said turbine to said smaller sun gear during operation in the first, second and third speed ratios, a first overrunning brake for transferring reaction torque from said carrier to a stationary portion of the mechanism during operation in the low speed ratio, intermediate brake means comprising a second overrunning brake and a friction brake arranged in series relationship for distributing reaction torque from the larger sun gear to said stationary portion during intermediate speed ratio operation, second friction clutch means for connecting said driving member to said carrier during third speed ratio operation and during overdrive operation, said first clutch means distributing torque to the smaller sun gear during direct-drive operation to establish a split torque delivery with a portion of the torque of the driving member being distributed hydrokinetically and the balance being distributed mechanically to the driven member, and an overdrive brake means for anchoring the larger sun gear during overdrive operation as said second overrunning brake freewheels.

4,226,124

PRESSURE ISOLATOR

Jean Kersten, Brussels, Belgium, assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 2, 1979, Ser. No. 26,621
Int. Cl.[3] G01L *7/08*
U.S. Cl. 73—706 **12 Claims**



1. Apparatus for isolating a pressure-sensitive device from blood flowing in an extra-corporeal blood system and for transmitting the blood pressure from a blood flow line coupled to the pressure sensing device through the isolating apparatus, including a pressure chamber having an inlet coupled to the blood flow line and an outlet coupled to the pressure sensing device, and a membrane disposed transverse said chamber and surrounded by the chamber to segregate an inlet side of said chamber from an outlet side of said chamber, said membrane being fluid-impermeable and having its outer peripheral portion connected to the surrounding housing, comprising:

said membrane having a generally planar, circular central portion lying in a plane between the outer peripheral portion and the outlet side;

said membrane having an intermediate portion contiguous with and between the central portion and the outer peripheral portion, said intermediate portion extending from the outer peripheral portion in the direction of said inlet side and turning to have a curved portion contiguous with the circumference of said circular central portion, whereby said intermediate portion has a generally U-shaped cross-sectional configuration with one side of the U being contiguous with said outer peripheral portion, the other side of the U being contiguous with the central portion and the bight of the U being located in a plane between said outer peripheral portion and said inlet side;

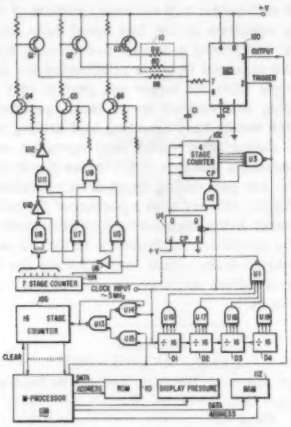
said inlet coupled to the blood flow line being in communication with said inlet side; and

said outlet coupled to the pressure sensing device being in communication with said outlet side.

4,226,125
DIGITAL PRESSURE SENSOR SYSTEM WITH TEMPERATURE COMPENSATION

John B. S. Waugh, Mountain Lakes, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jul. 26, 1979, Ser. No. 61,162
Int. Cl.[3] G01L *19/04, 9/06*
U.S. Cl. 73—708 9 Claims



1. A digital pressure sensor system with temperature compensation comprising:

a timing circuit having an input means and an output means, said timing circuit being capable of producing on said output means a first output level and a second output level, each of said output levels having a time duration responsive to signals on said input means;

a first resistive element coupled to said timing circuit input means wherein the magnitude thereof determines a first time duration of said first output level, said first resistive element having the characteristic wherein the magnitude thereof increases as the ambient pressure there around increases, said first resistive element also being temperature dependent;

a second resistive element coupled to said timing circuit input means wherein the magnitude thereof determines a second time duration of said first output level, said second resistive element having the characteristic wherein the magnitude thereof decreases as the ambient pressure there around increases, said second resistive element also being temperature dependent;

a third resistive element coupled to said timing circuit input means wherein the magnitude thereof determines a third time duration of said first output level, said third resistive element having a temperature dependency significantly less than the temperature dependencies of said first and said second resistive elements;

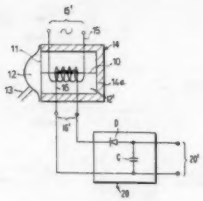
means both for selectively energizing said first, second and third resistive elements separately for establishing signals on said timing circuit input means relating to said first, said second and said third time durations respectively, of said first output level, and for selectively energizing said first and said second resistive elements simultaneously for establishing a signal on said timing circuit input means relating to a fourth time duration of said first output level; and

means for compiling and analyzing said first, second, third and fourth time durations of said first output level, wherein said first and second time durations of said first output level relate to the ambient pressure and said third and fourth time durations of said first output level relate to the ambient temperature, whereeby a pressure reading may be obtained from said pressure sensor system having the ambient temperature compenssated therefor.

4,226,126
MECHANICAL DISPLACEMENT-ELECTRICAL SIGNAL TRANSDUCER

Werner Herden, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 13, 1979, Ser. No. 20,226
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1978, 2815324
Int. Cl.[3] G01L *9/10*
U.S. Cl. 73—728 14 Claims



1. Displacement transducer to provide an electrical output signal representative of a small displacement comprising

a support (**14**) having an end holder (**14***a*);

a deflectable holder (**11**) spaced from said end holder and movable in accordance with the displacement to be measured,

and comprising, in accordance with the invention,

a ferromagnetic wire (**10**) having an approximately rectangular B-H diagram characteristic stretched between said end holder (**14***a*) and said deflectable holder (**11**);

an exciter coil (**15**) magnetically coupled to said wire and alternately, reversely magnetizing said wire;

a pickup coil (**16**) magnetically coupled to said wire and providing output pulses having characteristics representative of the strain on the wire as the deflectable holder (**11**) is displaced upon induced alternate reverse magnetization of said wire by said exciter coil., to permit obtaining a representation of said strain upon evaluation of the characteristics of said output pulses.

4,226,127
HAND OPERATED YIELD TIGHTENING SYSTEM

Russell J. Hardiman, Quakertown, Pa., assignor to SPS Technologies, Inc., Jenkintown, Pa.

Continuation of Ser. No. 864,411, Dec. 27, 1977, abandoned. This application Aug. 2, 1979, Ser. No. 63,011
Int. Cl.[3] B25B *23/142*
U.S. Cl. 73—761 9 Claims

8. A method of tightening a fastener assembly comprising the steps of:

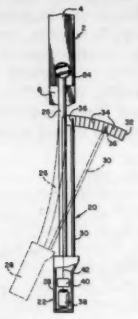
applying torque and imparting rotation to the fastener assembly;

mechanically differentiating the magnitude of said torque with respect to the degree of said rotation for producing discrete, intermittent output parameter signals, the rate of occurrence of successive output parameter signals being substantially directly proportional to the slope of a torque-rotation curve which could be generated for the fastener assembly being tightened;

monitoring said discrete, intermittent output parameter signals; and

providing an indication when a change in the frequency of

successive discrete, intermittent output parameter signals occurs indicative of a change in the slope of said torque-



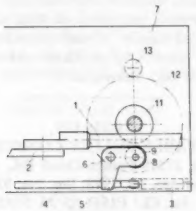
rotation curve, thereby indicating when the fastener assembly has been tightened to the yield point thereof.

4,226,128

FRICTION DEVICE FOR USE IN CAR RADIOS

Ezio F. Dellantonio, Rome, Italy, assignor to Autovox S.p.A., Rome, Italy

Filed Apr. 13, 1978, Ser. No. 896,122
Claims priority, application Italy, Apr. 15, 1977, 48980 A/77; Aug. 10, 1977, 50625 A/77
Int. Cl.[2] F16H *35/18*
U.S. Cl. 74—10 R **15 Claims**



1. A friction device for use in car radios in which a frame carries a conventional tuning slider, a tuning knob and a keyboard of keys for the preselection of transmitter stations, wherein the improvement comprises: a reciprocable element secured to the tuning slider; and a rotatable element driven by the tuning knob, said elements being releasably urged against each other into frictional contact and their surfaces of mutual contact being shaped in such a manner that the surface of one element is wedged into the surface of the other element.

4,226,129

WORM DRIVE MECHANISM

Harvey Henderson, P.O. Box 84, Palm Desert, Calif. 92260

Filed Apr. 12, 1978, Ser. No. 895,538
Int. Cl.[2] F16H *27/02, 29/20*
U.S. Cl. 74—89.15 **14 Claims**

14. A drive mechanism comprising:

an elongated worm;

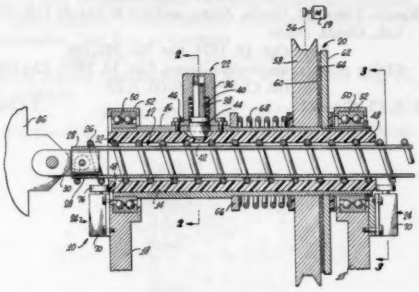
a nut having at least one internal groove engaging said worm;

a sleeve surrounding said nut;

motor means for rotating said sleeve;

locking means for locking said nut to said sleeve for rotation therewith, said locking means comprises a recess defined by the outer surface of said nut, a drive member carried by said sleeve, and a locking spring arranged to bias said drive member toward and into said recess, said recess extending longitudinally along said nut and being tapered for maximum depth at the center thereof to allow disengagement of said drive member from said recess upon longitudinal movement of said nut in either of two opposite directions; and

release means for normally preventing longitudinal movement of said nut relative to said sleeve and for releasing



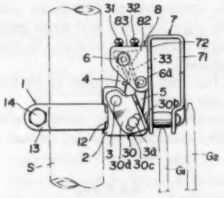
said nut for longitudinal movement upon actuation thereof, said release means comprising a pair of blocking members disposed at opposite ends of said nut, each of said blocking members having a retaining position in which it engages said nut and a release position in which it does not engage said nut, whereby movement of one of said blocking members to its release position permits free longitudinal movement of said nut with said worm member in one direction.

4,226,130

FRONT DERAILLEUR FOR A BICYCLE

Mitsuhide Isobe, Toyonaka, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan

Filed Aug. 31, 1978, Ser. No. 938,692
Claims priority, application Japan, Sep. 6, 1977, 52-12035[U]; Sep. 5, 1977, 52-120236[U]
Int. Cl.[2] F16H *7/00, 9/00*
U.S. Cl. 474—82 **4 Claims**



1. A front derailleur for a bicycle mounted to an upwardly extending seat tube thereof for shifting a driving chain from one of at least two gears including a larger diameter gear and a smaller diameter gear to the remaining gear comprising:

a base member fixed to said seat tube;

two linkage members fixed swingably to said base member and extending upwardly and outwardly from said seat tube; and

a movable member pivoted to said linkage members having a chain guide; said linkage members having first end portions pivoted to said base member and second end portions pivoted to said movable member, said second end portions being positioned upward from the seat tube with respect to said base member, said chain guide moving said chain

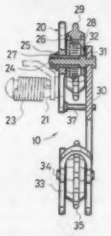
from said larger diameter gear in an upwardly convex arc, and moving said chain downwardly in a convex arc when said chain is moved from said smaller diameter gear to said larger diameter gear whereby said chain meshes with said gears with a minimum amount of contact with the sides of said gears.

4,226,131

BICYCLE REAR DERAILLEUR

Kazuto Yamasaki, Osaka, Japan, assignor to Maeda Industries, Ltd., Osada, Japan

Filed Oct. 16, 1978, Ser. No. 951,798
Claims priority, application Japan, Oct. 14, 1977, 52-123829
Int. Cl.[2] F16H *9/00, 7/12*
U.S. Cl. 474—82 **5 Claims**



1. A bicycle rear derailleur comprising:
a guide pulley guard pivotally mounted on a first shaft which is support by a movable element of a shifter means connected to a mounting bracket fixedly secured to a bicycle rear wheel hub spindle;
a coil spring surrounding said first shaft so as to urge said guide pulley guard in one direction about said first shaft;
a second shaft supported by said guide pulley guard and spaced apart from said first shaft;
an inner pulley rotatably mounted on said second shaft;
a guide pulley rotatably mounted on said inner pulley;
a flat spiral spring operatively interposed between said inner pulley and said second shaft;
one end of said flat spiral spring being fixedly connected to said second shaft and another end of said flat sprial being engaged with said inner pulley;
a tension link mounted at its upper end to said second shaft and rigidly connected to said inner pulley, so that the tension link together with said inner pulley are urged by said flat spiral spring so as to move in one direction about said second shaft;
said tension link being provided at its lower end with a tension pulley guard;
a third shaft supported by said tension pulley guard; and
a tension pulley rotatably mounted on said third shaft.

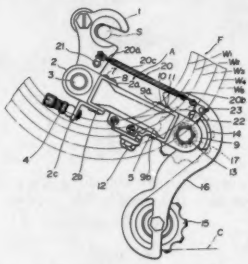
4,226,132

REAR DERAILLEUR FOR A BICYCLE

Masashi Nagano, Sakai, and Mitsuhide Isobe, Toyonaka, both of Japan, assignors to Shimano Industrial Company, Limited, Osaka, Japan

Filed Apr. 12, 1979, Ser. No. 29,303
Claims priority, application Japan, Apr. 17, 1978, 53/45530
Int. Cl.[3] F16H *7/22*
U.S. Cl. 474—82 **11 Claims**

1. A rear derailleur for a bicycle, which is adapted to switch a driving chain to a sprocket of a multi-stage freewheel attached to a rear hub of the bicycle, said derailleur comprising;
(a) a fitting member fixed to the bicycle frame;
(b) a pantograph mechanism swingably supported to said fitting member through a first transverse shaft;
said pantograph mechanism comprising a supporting member pivoted to said fitting member through said first transverse shaft, two linkage members pivoted to said supporting member through first and second longitudinal shafts, and a movable member pivoted to said linkage members through third and fourth longitudinal shafts, said supporting member, two linkage members and movable member, being formed in a parallelogram, whereby said parallelogram is transformed to allow said movable member to move axially of said freewheel;
(c) guide cages having two pulleys and being supported swingably to said movable member at said pantograph mechanism through a second transverse shaft;



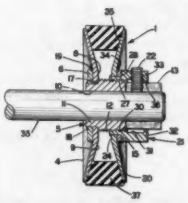
(d) urging means for urging said guide cages in the direction of applying tension to said driving chain guided by said pulley;
(e) a holder provided between the fitting member and said pantograph mechanism,
said holder holding said pantograph mechanism in a particular position with respect to said fitting member to thereby offset the position of said movable member with respect to each of the sprockets at said freewheel, so that when said movable member is moved axially of said freewheel to switch said driving chain to one of said sprockets said movable member is moved radially of said freewheel.

4,226,133

ADJUSTABLE PULLEY CONSTRUCTION

Merlin S. Hanke, 27570 French Creek Rd., Avon, Ohio 44011

Filed Jun. 15, 1978, Ser. No. 915,961
Int. Cl.[3] F16H *55/36, 55/52*
U.S. Cl. 474—42 **6 Claims**



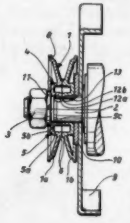
1. Variable pitch pulley construction including:
(a) first and second disc means having spaced, outwardly extending complementary belt-engaging surfaces;
(b) inner hub means mounted on and extending concentrically from the first disc means, said first disc means and inner hub means being formed with a shaft-receiving bore;
(c) the inner hub means having an externally threaded portion located adjacent the first disc means and an unthreaded outer end portion;
(d) longitudinally extending slot means formed in the unthreaded outer end portion of the inner hub means and communicating with the bore of said inner hub means;

(e) outer hub means mounted on an extending concentrically from the second disc means, said second disc means and outer hub means being formed with a bore axially aligned with the bore of the first disc means and inner hub means;
(f) the outer hub means bore having an internally threaded portion and an internally unthreaded portion;
(g) a radially extending threaded opening formed in the outer hub means and communicating with the unthreaded portion of the outer hub means bore;
(h) single set screw means adjustably mounted in the radially extending threaded opening of the outer hub means;
(i) the internally threaded portion of the outer hub means bore being engaged with the externally threaded portion of the inner hub means to adjustably mount the second disc means on the inner hub means of the first disc means for selectively spacing the belt engaging surfaces of the first and second disc means with respect to each other, said radially extending threaded opening of the outer hub means being adapted to be in radial alignment with the slot means of the inner hub means when the disc means are in an adjusted position;
(j) the set screw means extending through the aligned radial opening and slot means of the outer and inner hub means and into the bore of the inner hub means for engaging a shaft extending through said inner hub means bore to mount the pulley construction on said shaft while simultaneously operatively engaging the inner hub means to prevent relative rotation between the adjusted inner and outer hub means; and
(k) the unthreaded outer end of the inner hub means forming a slip fit telescopic engagement with the unthreaded portion of the outer hub means bore.

4,226,134
BELT PULLEY

Rüdiger Sohnle, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 22, 1979, Ser. No. 5,486
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1978, 2808332
Int. Cl.³ F16H *55/36*
U.S. Cl. 474—181 **6 Claims**

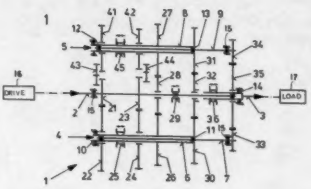


1. A belt pulley including a hollow hub region having a central opening for receiving a shaft and an outer beltcarrying region, said belt pulley being formed by mating juxtaposition of two substantially identical pulley halves, each of said pulley halves (1*a*, 1*b*) having an inner bulge in contact with the inner bulge of the other defining said hub region;
wherein said bulges in each of said pulley halves (1*a*, 1*b*) includes
a first, outer axially extending surface (5*a*) attached to said outer belt-carrying region, the first axially extending annular surface, having first end portions in contact with each other,
a second diametrically extending outer annular surface (5*b*), the outer edge of which is connected to the second end portions of said first annular surface (5*a*) and which extends in a plane substantially parallel to the plane of the pulley, and a cylindrical axially extending inner annular surface (5c), one edge of which is connected to said second annular surface (5*b*), said cylindrical inner annular surfaces (5*c*) of said halves being in contact with and abutting against each other, being substantially coaxial with a shaft and defining the opening for a shaft in said hub region.

4,226,135
LOAD-SPLITTING TRANSMISSION

August Winter, Friedrichshafen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany

Filed Jul. 20, 1978, Ser. No. 926,288
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1977, 2736929
Int. Cl.² F16H *3/08, 37/10*
U.S. Cl. 74—330 **10 Claims**



1. A load-splitting transmission comprising:
a central shaft having coaxial and relatively rotatable input and output parts;
two outer shafts flanking said central shaft, at least one of said outer shafts having a tube shaft, a core shaft in said tube shaft, and means rotationally interconnecting said core and tube shafts and permitting limited relative twisting of said core and tube shafts remote from said means;
a plurality of sets of gears each including a central gear on said central shaft and two respective outer gears on said outer shafts each meshing continuously with the respective central gear, one of said outer gears of one of said sets being on said tube shaft and one of said outer gears of another of said sets being on said core shaft;
means for rotationally coupling one of said central gears to said output part, another of said central gears being freely rotatable on said central shaft; and
means for transmitting torque between said input part and both of said outer shafts, whereby the torque applied to said input end is imparted to both of said outer shafts and then split therebetween by means of said other central gear and is eventually summed by said one central gear and applied to said output part.

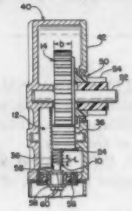
4,226,136
GEAR DRIVE ASSEMBLY

Troy L. Porter, Wheeling, and Rudolph J. Belansky, Elmhurst, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed May 24, 1979, Ser. No. 42,167
Int. Cl.³ F16H *1/16*
U.S. Cl. 74—416 **11 Claims**

1. A compact gear drive assembly for use in a window actuator or the like comprising two gear sets, a skew axis input gear set and a parallel axis output gear set; said input gear set including a drive pinion and a face gear; said output gear set including a spur gear and an output gear; the face gear of the input gear set and the spur gear of the output gear set being coaxial and forming a cluster gear; said face gear having a base plane out of which gear teeth project; the spur gear having radially projecting teeth which extend longitudinally out of the base plane of said face gear a predetermined distance thereby overlapping the teeth of said face gear; the drive pinion having a diameter which is less than said predetermined distance; the

output gear having radially projecting teeth which are designed to mesh with and be driven by the teeth of said spur



gear, said output gear having a thickness which is also less than said predetermined distance such that the gear drive assembly has a generally flat, compact configuration.

4,226,137

SCREW AND NUT MECHANISM

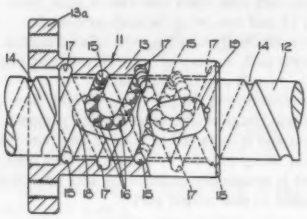
Roy T. Sharp, Cheddington, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jul. 20, 1978, Ser. No. 926,242

Claims priority, application United Kingdom, Aug. 4, 1977, 32719/77

Int. Cl.[2] F16N *55/04*

U.S. Cl. 74—459 4 Claims



1. A recirculating ball screw and nut mechanism comprising a screw which includes a shaft having an external helical groove, a nut including a sleeve encircling said shaft, said sleeve having an internal helical groove defining with said external groove of the shaft a helical working track and balls running in said track for effecting co-operation between the nut and the screw, said balls moving from one end to the other end of said working track during relative rotation of the nut and screw and means wholly within said sleeve defining a ball return path for returning balls from said other end to said one end of the working track, said ball return path including a groove extending around an inner wall of the sleeve coaxial with the working track and between convolutions of the working track without crossing the working track, said groove having a depth greater than the diameter of the balls and the return path including a generally U-shaped region at each end for respectively diverting balls from and returning balls to the working track.

4,226,138

DEVICE FOR LEVER OPERATION OF THE AIR CONDITIONING CONTROLS OF AN AUTOMOBILE

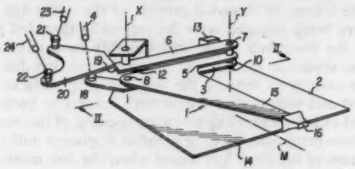
Pascal Ha-Pham, Asnieres, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jun. 13, 1978, Ser. No. 915,235

Claims priority, application France, Jun. 13, 1977, 77 17987

Int. Cl.[2] G05G *9/00*

U.S. Cl. 74—471 R 5 Claims



1. A multiple-command device for cable control of the air conditioning elements of an automobile comprising:

a mounting plate immovably fixed to said automobile;

a control lever;

at least one link articulated on the plate by a fixed axis serving as pivot for the lever and also articulated on the lever by an axis movable with respect to the plate and offset with respect to the fixed axis, the lever being articulated on the plate successively about said two axes by the intermediary of said at least one link;

at least one control cable attached to said at least one link;

a stop on the plate, the movable axis being rendered momentarily fixed by the stop, said at least one link coming to rest against the stop in the course of the excursion of the lever so that the movable axis becomes a new pivot for the rest of the travel of the lever.

4,226,139

VISCOUS SHEAR DAMPERS

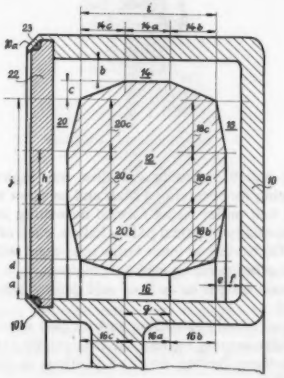
Imre Zilahi-Szabo, Gyor, Hungary, assignor to Magyar Vagones Gepgyar, Gyor, Hungary

Filed Dec. 13, 1977, Ser. No. 858,907

Claims priority, application Hungary, Dec. 13, 1976, MA 2839

Int. Cl.[3] F16F *15/10*

U.S. Cl. 74—574 4 Claims



1. A viscous shear damper including a ring-shaped casing and a seismic mass in the form of an annular body arranged for floating in said casing, said casing and said seismic mass defining between them an outer peripheral gap, an inner peripheral gap, and a pair of lateral gasp for being filled with a viscous

fluid, all said gaps having each oppositely widening out sections on both sides of a middle portion, the widths of the gaps at their widest points being not greater than twice their widths at their narrowest points, and the middle portion of each gap being not longer than the widening out portions contiguous therewith, the annular body having convex peripheral and lateral surfaces comprising each an elevated middle portion between a pair of outwardly declining lateral portions, the declining lateral portions of the convex surfaces lying on cones having apices, the apices of the cones lying on the axis of the damper while the middle portions are cylindrical contiguous to the peripheral gaps and annular contiguous to the lateral gaps so that the annular body has altogether eight conical surfaces.

4,226,140

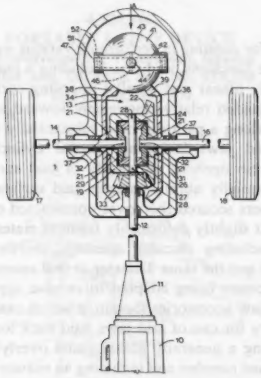
SELF-PROPELLED VEHICLE

Johannes L. Gaasenbeek, 127 Glen Rd., Toronto, Ontario, Canada (M4W 2W1)

Continuation-in-part of Ser. No. 751,189, Dec. 14, 1976, abandoned. This application Dec. 15, 1977, Ser. No. 860,875

Int. Cl.³ F16H *37/06*

U.S. Cl. 74—690 **16 Claims**



1. A self-propelled vehicle having non-steerable ground reaction members and having a steering and propulsion drive comprising a differential gear having a rotary carrier member rotated by the vehicle engine, at least one planetary gear carried on the carrier member and rotating bodily therewith, two reaction gears meshing with the planetary gear and driving left-hand and right-hand ground reaction members, respectively, a variable-speed traction drive connected between the two reaction gears, comprising a rotatory member coupled to each reaction gear, a body of revolution, one of said body and said rotatory member being of varying diameter along its rotational axis, and means supporting the body in tractional driving engagement with the rotatory members for shifting the position of the body of revolution relative to the rotatory members whereby the tractional drive ratio between the rotatory members can be varied and whereby the vehicle can be steered by adjusting the drive ratio of the variable speed traction drive so as to adjust differentially the speeds of the two reaction gears and of the ground reaction members coupled thereto.

4,226,141

AUTOMATIC TRANSMISSION GEAR CHANGE SHOCK REDUCTION SYSTEM PARTICULARLY FOR AUTOMOTIVE DRIVE TRAINS

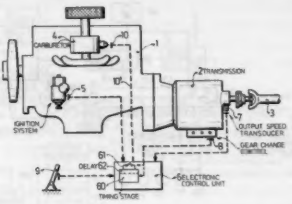
Helmut Espenschied, Ludwigsburg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 3, 1978, Ser. No. 902,420

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726377

Int. Cl.³ B60K *15/00, 20/16*

U.S. Cl. 74—858 **2 Claims**



1. In combination with a drive train system having an internal combustion (IC) engine (1) and an automatic transmission (2) coupled to the engine,

means to reduce the switching shock upon gear change of the transmission

comprising means (18) generating up-shift and down-shift gear change control signals;

fuel supply control means (6) inlcuding timing means (60) responsive to a gear change control signal and connected to and controlling the fuel supply to the engine to inhibit fuel supply to the engine for a predetermined time interval upon sensing a gear change control signal and providing a fuel supply inhibit signal when fuel supply is to be inhibited;

time delay means (62) connected to the fuel supply control means (6), said delay means being controlled by the gear change control signals and being effective upon control by a down-shift gear change control signal, but ineffective upon control by an up-shift gear change control signal to delay by a predetermined time interval inhibition of fuel supply upon down-shifting permit a speed increase of the engine just prior to engagement of a down-shift gear of the transmission to thereby stimulate a double clutching effect;

and wherein the IC engine includes a carburetor

an air bypass (21) in the vacuum system of the carburetor,

and a controllable valve (23) in the air bypass, connected to and controlled by said inhibit signal to selectively break or hold the vacuum in the carburetor by opening or closing, selectively, said bypass to control the carburetor to be responsive to said inhibit signal to inhibit fuel supply upon sensing said inhibit signal.

4,226,142

AUTOMATIC TRANSMISSION UTILIZING A SLIDER FOR PRESSURE DISTRIBUTION TO SERVO-ELEMENTS CONTROLLING THE GEAR RATIO

Helmut Rembold, Moglingen, and Ernst Linder, Muhlacker, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 1, 1978, Ser. No. 929,997

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1977, 2744286

Int. Cl.² B60K *41/04*

U.S. Cl. 74—867 **7 Claims**

1. In a transmission having gears operable in a plurality of gear ratios, a control unit (50) for furnishing gear shift control signals signifying a desired shift from a then-present gear ratio to a newly selected gear ratio, a plurality of servo-elements (16,

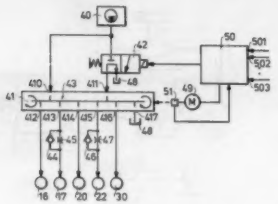
etc.) for controlling the engagement and disengagement of said gears in accordance with pressure applied thereto, said plurality of servo-elements including at least one servo-element to be activated during said desired shift, and a pressure source (40) furnishing a pressure medium at a main pressure:

a gear shift system comprising distributor means (41) having a first and second pressure medium intake (410, 411), a plurality of pressure medium outlets (412-416) each connected to a corresponding one of said servo-elements, and movable slider means adapted to connect the pressure medium outlet connected to said at least one servo-element to said second pressure medium intake during said desired shift;

moving means (49) for moving said movable slider means under control of said gear shift control signals;

connecting means for connecting said first pressure medium intake directly to said pressure source; and

valve means (42, 52) interconnected between said pressure source and said second pressure medium intake for regulating transmission of pressure from said pressure source to said second pressure medium intake under control of said gear shift control signals.

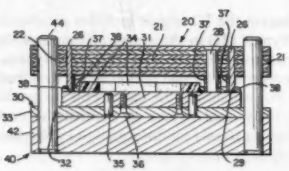


4,226,143

METHOD OF MAKING STEEL RULE TYPE PIERCING AND BLANKING DIES

Graydon D. Whitecotton, 791 Shaddow Brook Dr., and Walley E. Whitecotton, 1316 Branch La., both of Columbia, S.C. 29210

Filed May 14, 1979, Ser. No. 37,511
Int. Cl.³ B21K *5/12*
U.S. Cl. 76—107 C **9 Claims**



1. The method of making steel rule dies, comprising

forming a steel rule first die having shearing elements with shearing side faces thereon and having means for positioning the die in a holder,

mounting a punch die blank on a support having means for positioning the punch die in aligned relation with the first die,

applying to the shearing side faces of the shearing elements one or more layers of adhesive tape of predetermined thickness to define a clearance-producing layer thereon,

providing an adherent impressionable soft layer of hardenable resin on the punch blank over areas opposite the shearing elements of said first die, said layer being of substantial thickness so as to form a die element impression defined by edge faces of substantial width,

assembling the first die in aligned relation with the punch die blank and with the shearing elements of the first die impressed deeply in said soft impressionable resin layer so as to form wide edge faces in said layer matching the faces of said clearance-producing layer of tape on the shearing faces of the first die,

hardening said resin layer with the parts so assembled so as to form a hardened impression defined by said wide edge faces,

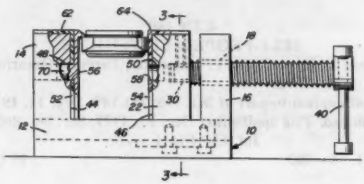
and machining the punch blank to said hardened impression to form a punch to match said first die with clearance therefrom corresponding to the thickness of said tape.

4,226,144

VISE WITH WATCH COMPONENT ENGAGING JAW ACCESSORIES

Larry E. Pliley, 470 S. Colorado Blvd., Suite 209, Denver, Colo. 80222

Filed Jul. 20, 1978, Ser. No. 926,402
Int. Cl.³ G04D *3/00*
U.S. Cl. 81—6 **2 Claims**



1. A vise for assisting in performing various watch repair and maintenance functions, said vise including a pair of jaws having generally planar and parallel opposing surfaces and supported for guided relative movement toward and away from each other along a path disposed substantially normal to said surfaces, said jaws including coaxial cylindrical recesses formed therein opening outwardly of said surfaces and disposed substantially normal thereto, said surfaces having thin panel members secured thereover constructed of shape retentive, stiff but slightly deformably resilient material, said panel members including circular openings therein substantially coaxial with and the same diameter as said recesses, said openings and recesses being adapted to receive supporting shank portions of jaw accessories therein, a watch case back loosening accessory for one of said jaws, said back loosening accessory including a generally planar panel overlying the corresponding panel member and including an outwardly projecting integral shank portion removably snugly received through and in the corresponding circular opening and cylindrical recess, respectively, said panel including a marginal edge portion thereof along which a rigid outstanding lip extends, said lip projecting outwardly from said panel toward the other jaw and tapering outwardly from said panel to define a sharpened wedge member for wedging between adjacent portions of a watch back and case.

4,226,145

WIRE STRIPPER

John F. Gill, 919 Libby St., Clarkston, Wash. 99403

Filed Jun. 25, 1979, Ser. No. 51,849
Int. Cl.³ H02G *1/12*
U.S. Cl. 81—9.5 R **5 Claims**

1. A wire stripper, comprising:

a pivot pin defining a fixed pivot axis;

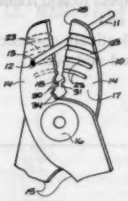
a first jaw member mounting the pivot pin and extending to one side of the pivot axis;

a first handle member joined to the first jaw member and extending to an opposite side of the pivot axis;

a second jaw member mounted to the pivot pin and extending to the one side of the pivot axis;

a second handle member joined to the first jaw member and extending to the opposite side of the pivot axis;

the first and second jaw members having facing planar surfaces arranged perpendicular to the pivot axis to slide over one another in a shearing motion in response to pivotal movement of the handle members about the pivot axis;



oppositely facing leading edges extending substantially radially with respect to the fixed pivot axis along the first and second jaw members;

an arcuate groove formed along the planar surface of each jaw member, extending along the planar surface from the leading edge thereof;

wherein the grooves are formed along a single radius from the fixed pivot axis and face each other to define an opening of cross-sectional dimension substantially equal to a standard electrical wire diameter.

4,226,146

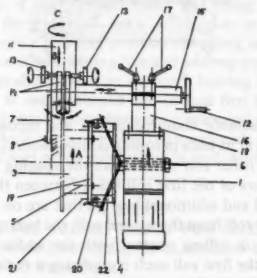
PORTABLE LATHE DEVICE

Uno Ekman, Restadvägen 12, Vänersborg, Sweden

Filed Aug. 14, 1978, Ser. No. 933,588

Int. Cl.³ B23B *5/04*

U.S. Cl. 82—4 A **1 Claim**



1. A portable lathe device, intended primarily for returning of brake discs and comprising a portable driving device including a drive member and a clutch device connected with said drive member, said clutch device incorporating a centering device adapted to ascertain that the driving device and the brake disc shafts are aligned, said centering device comprising a rotatable disc for mounting to the brake disc, guiding means for aligning the rotatable disc with the brake disc and clamping means for locking the rotatable disc and the brake disc in aligned position, means for attaching said clutch device to a brake disc for rotation of the disc when still mounted on a wheel shaft and from which brake disc the vehicle wheel has been dismounted, a tool holder adjacent the driving device and provided with feed means, means for attaching said tool holder to the mounting points for a dismounted brake yoke, said tool holder including two individually adjustable lathe tools intended one for each side of the brake disc and said tool holder being moveable radially relative to the brake disc and a supporting arm rigidly connecting said last holder with said driving device to form an integral portable unit.

4,226,147

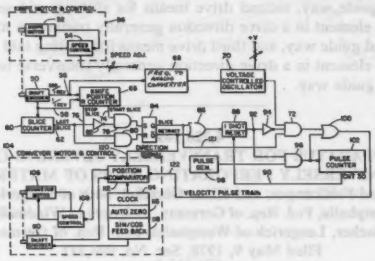
SLICE CONTROL CIRCUIT FOR A SLICING MACHINE

Theodore B. Kumzi, Oaklawn, Ill., assignor to Chemetron Corporation, Chicago, Ill.

Filed Oct. 27, 1978, Ser. No. 955,669

Int. Cl.³ B26D *5/30, 3/22, 1/28*

U.S. Cl. 83—37 **19 Claims**



18. A method of intermittently slicing a product on a slicing machine having a rotating knife to produce discrete series of slices, said method comprising the steps of:

advancing the product across the knife at a first rate until a predetermined number of whole slices has been cut to form a first said series of slices;

interrupting slicing by retracting the product from the blade at a second rate, faster than said first rate;

introducing the product to the knife by moving the product at said second rate to engage the knife with the latter in the same position relative to the product as in the start of said retracting step; and

again advancing the product across the knife at said first rate whereby to form a second said series of slices,

the said position of the knife at the start of said retracting step and the end of said introducing step being preselected to avoid partial, non-uniform slices at the beginning and end, respectively of said second and first series.

4,226,148

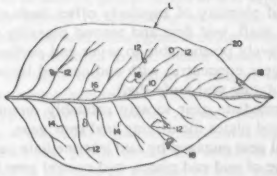
DEVICE FOR TRANSLATING AND ROTATING A CUTTING PLATEN WITH RESPECT TO A RECIPROCAL CUTTER

David J. Logan, Glastonbury, and Robert J. Pavone, South Windsor, both of Conn., assignors to Gulf & Western Corporation, New York, N.Y.

Filed May 2, 1978, Ser. No. 902,263

Int. Cl.³ A24C *1/00, 1/04;* **B26D** *5/30*

U.S. Cl. 83—71 **14 Claims**



1. A device for cutting a piece from a flat workpiece at a location identified by two or more binary coded numbers, said device comprising: a cutter; a cutting platen having an upper workpiece supporting cutting surface and a lower portion; a pluarlity of upstanding shiftable members, guide means on said platen adjacent said lower portion for loosely receiving said

members; means for moving said members in accordance with said coded numbers; and means for forcing said cutter against said cutting surface, said guide means including first, second and third guide ways on said platen, said first and second guide ways extending generally in a first direction and said third guide way extending in a second direction at a known angle to said first direction wherein said shiftable members are first, second and third drive elements slidably received in said first, second and third guide ways respectively and wherein said moving means includes first drive means for shifting said first drive element in a drive direction generally transverse to said first guide way, second drive means for shifting said second drive element in a drive direction generally transverse to said second guide way, and third drive means for shifting said third drive element in a drive direction generally transverse to said third guide way.

4,226,149

APPARATUS FOR TRANSVERSELY SEVERING OR TRANSVERSELY PERFORATING WEBS OF MATERIAL

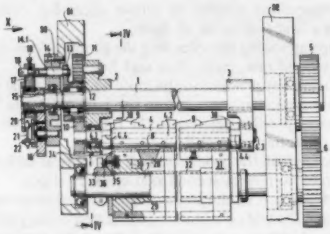
Richard Feldkamper, and Klaus Ginschel, both of Lengerich of Westphalia, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich of Westphalia, Fed. Rep. of Germany

Filed May 9, 1978, Ser. No. 904,311

Claims priority, application Fed. Rep. of Germany, May 20, 1977, 2722925

Int. Cl.³ B26D *1/56*

U.S. Cl. 83—305 **9 Claims**



1. Apparatus for selectively transversely severing predetermined lengths of web material and for transversely perforating the web materials, the web materials being preferably paper webs used in the manufacture of paper sacks, comprising:

a frame;

a central shaft rotatably mounted in said frame;

end plates carried by and rotable about said central shaft;

a splined shaft mounted in said frame parallel to said central shaft;

a first plurality of angularly offset tools carried by said splined shaft;

a knife shaft rotably mounted in said end plates parallel to said central shaft;

a second plurality of angularly offset tools carried by said knife shaft, said first and second plurality of tools being selectively positionable to sever and perforate webs;

a spur gear concentric with and carried by said knife shaft for rotating said knife shaft;

an intermediate gear loosely rotatably mounted in one of said end plates for driving said spur gear;

a central gear engaged by said intermediate gear and carried by one of said end plates, said central gear being concentric with and rotatable about said central shaft;

a first lever having a first end connected to said central gear;

an entrainment pin carried by a second end of said lever;

a second lever freely rotable about said central shaft and having a plurality of arms with openings formed therein, the angular orientation of said arms coinciding with the angular orientation of tools carried by said knife shaft, said entrainment pin being selectively insertable into one of said openings;

a second spur gear freely rotable in said frame;

a crank pin eccentrically mounted on said second spur gear;

a third spur gear secured to said central shaft and meshing with said spur gear, the transmission ratio between said third spur gear and said second spur gear being selectable in dependence on the predetermined length to be severed;

a pin fixed with respect to said frame for holding said central gear stationary; and

a crank rod for selectively connecting said second lever to said crank pin and said pin.

4,226,150

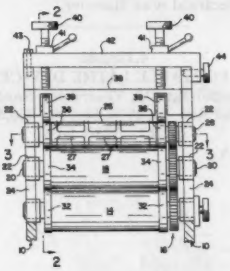
DEFLECTABLE BEARER ROLL

Charles F. Reed, Leroy Township, Lake County, Ohio, assignor to Avery International Corporation, San Marino, Calif.

Filed Aug. 15, 1978, Ser. No. 934,057

Int. Cl.² B23D *25/12*; B26D *1/40*

U.S. Cl. 83—346 **8 Claims**



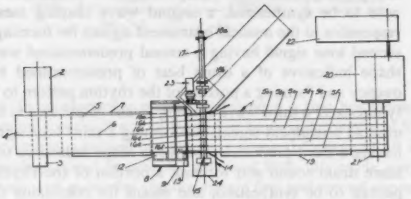
1. A roll assembly comprising first and second rolls each having bearers at its ends in rolling contact with corresponding bearers of the other roll to establish the spacing between the rolls, the bearers of the first roll being between the bearers of the second roll and additional bearers that are on the opposite side of the first roll from the second roll, the bearers of the first roll also being in rolling contact with the additional bearers, the bearers of the first roll each comprising a radially intermediate portion, a radially inner portion rotatable with the roll, and a radially outer portion whose periphery is in rolling contact with a bearer of the second pair of rolls and with one of the additional bearers, the intermediate portion of each bearer of the first roll transmitting bearing loads between its associated inner and outer portions but being independent from each of them with respect to rotation, the intermediate portion of each bearer of the first roll including an annulus whose deflectability is relatively great as compared to the deflectability of other parts of the bearer construction, whereby application and increase of clamping-force loading on opposite sides of the bearers of the first roll by the bearers of the second roll and the additional bearers while constraining the axis of the first roll against lateral movement tends to increasingly deflect the deflectable annuli and to increasingly laterally displace the radially outer portions of the bearers of the first roll out from between the bearers of the second roll and the additional bearers to thereby increasingly diminish the spacing between the first and second rolls.

4,226,151

SLITTER HAVING ARBOR PAIRS MOUNTED ON A CASTER SUPPORTED BASE SHIFTABLE AND ORIENTABLE ALONG THE SLITTER FRAME

John J. Littley, Hamilton; Carl W. Koors, Harrison, both of Ohio; Richard F. Fussner, Brookville, Ind., and Frank Lengel, Cincinnati, Ohio, assignors to Cincinnati Incorporated, Cincinnati, Ohio

Filed Mar. 29, 1979, Ser. No. 24,970
Int. Cl.³ B23D *19/06*
U.S. Cl. 83—479 **13 Claims**



1. A slitter for use in a slitting line, said slitter comprising a supporting frame having a first frame portion extending transversely of the center line of said slitting line with an inboard end to one side of said slitting line and an outboard end to the other side of said slitting line and a second frame portion extending from said inboard end of said first frame portion, said inboard end of said first frame portion and said second frame portion supporting a smooth upper surface, at least two pairs of cooperating blade carrying arbors, said arbors of said pairs each having an inboard end and an outboard end, an inboard bearing housing for each of said arbor pairs, said inboard ends of the arbors of each pair being mounted in their respective one of said inboard bearing housings, said inboard bearing housings being mounted on a common base, caster means on said base, said base and its caster means being located on said smooth upper surface of said support frame and being shiftable and positionable thereon with each arbor pair being shiftable thereby between a working position extending transversely of said center line of said slitting line and a set-up position extending away from slitting line, an outboard bearing housing slidably mounted at said outboard end of said first frame portion and being shiftable thereon between a retracted position and a position in which it engages said outboard ends of said arbors of any one of said arbor pairs when in said working position.

4,226,152

SAW GUIDE SUBASSEMBLY FOR MITRE BOX

Sylvester W. Bies, Bloomfield, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed May 29, 1979, Ser. No. 42,887
Int. Cl.³ B27G *5/02*
U.S. Cl. 83—764 **14 Claims**

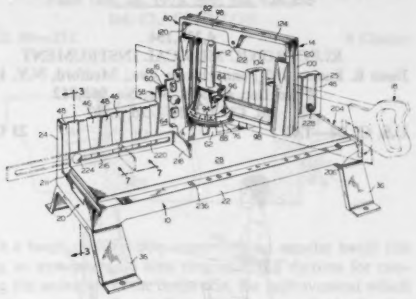
1. A saw guide assembly for a mitre box comprising:

A. a pair of saw guide elements adapted to receive a saw therebetween, said saw guide elements having vertically extending guide means on their opposed surfaces adjacent their ends;

B. opposed pairs of slides slidably seated on said saw guide elements and having bearing pads extending towards each other, said slides having guide means cooperating with said guide means of said saw guide elements to provide substantially aligned vertical movement of said bearing pads on said saw guide;

C. biasing means biasing said slides upwardly on said saw guide elements along said guide means thereof; and

D. means securing said saw guide elements in assembly whereby said pads are adapted to provide bearing surfaces for the associated saw received between said saw guide elements and said pads may be moved downwardly relative to said saw guide elements against the biasing pressure of said biasing means of downward pressure exerted by



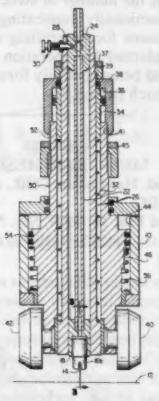
the saw as it cuts downwardly into an associated workpiece.

4,226,153

COMPENSATING GLASS SCORING HEAD

Thomas A. Insolio, Bristol, Conn., assignor to The Fletcher-Terry Company, Farmington, Conn.

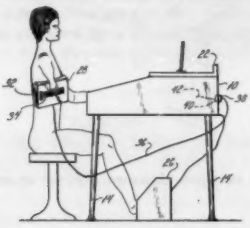
Filed May 17, 1979, Ser. No. 39,858
Int. Cl.³ B26D *3/08*; C03B *33/10*
U.S. Cl. 83—881 **9 Claims**



1. Apparatus for scoring sheet glass, comprising a support body adapted for relative movement in a plane generally parallel to the glass to be scored, piston means in said support body and adapted for limited reciprocating movement on a line oriented perpendicular said plane, glass scoring wheel support means reciprocably mounted in said piston means for limited movement on the same line of action as that of said piston means, a glass scoring wheel rotatably mounted in said reciprocable wheel support means for limited angular castering action on the said line of action, at least one glass contacting pressure roller mounted to said piston means for rotation on an axis oriented parallel to the axis of rotation of said glass scoring wheel and said roller axis intersecting said line of action for said piston means and said scoring wheel support means, biasing means acting between said support body and said piston means to provide a predetermined pressure for said roller to exert on the glass, and biasing means acting between said piston means and said scoring wheel support means to provide a cutting force for the scoring wheel which is independent of the

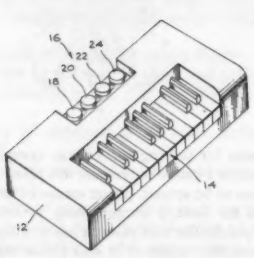
pressure of said roller on the glass and also independent of relative motion between the support body and said piston means due to unevenness in the glass surface being scored.

4,226,154
ELECTRONIC MUSICAL INSTRUMENT
Dean E. Easler, 193 Pennsylvania Ave., Medford, N.Y. 11763
Filed Dec. 4, 1978, Ser. No. 965,812
Int. Cl.³ G10H *1/36, 1/40*
U.S. Cl. 84—1.01 **21 Claims**



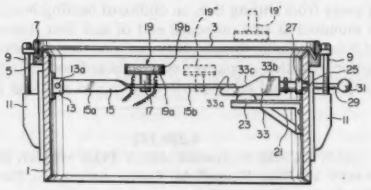
1. An electronic musical keyboard instrument comprising a console including sound producing and modulating circuitry and operator actuated first switching means formed of a number of switches for controlling said circuitry and initiating production and modification of sounds, and a separate unit including a second switching means formed of a number of switches less than the number of switches of said first switching means for functionally duplicating only a portion of said first switching means for controlling said circuitry, said unit being specially adapted for operation by a physically handicapped person and being specially formed complementarily to the handicap of such person.

4,226,155
MUSIC SYNTHESIZER
Scott A. Ferdinand, Hawthorne, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 16, 1979, Ser. No. 12,885
Int. Cl.³ G10F *1/00*
U.S. Cl. 84—1.03 **6 Claims**



1. A music synthesizer comprising, in combination:
keyboard means for entering musical notes to be synthesized into the music synthesizer,
rhythm control means for selecting prestored repetitive rhythm patterns and tempos to be synthesized into the music synthesizer;
single computer means comprising read only memory means and programmable processor means responsive to the keyboard means and the rhythm control means for selecting the priority of a musical note to be synthesized and for generating a binary signal and a first enable signal indicative of the frequency and amplitude respectively of the musical note to be synthesized and for generating musical instrument signals indicative of the frequency, amplitude, and tone color of the musical instruments to be synthesized, and for combining the musical instrument signals into the rhythm patterns and tempos to be synthesized;
monophonic tone generator means responsive to the binary signal for generating a first squarewave signal having the frequency of the musical note to be synthesized;
tone blender and shaper means including first wave shaping means responsive to the first squarewave signal and the first enable signal for forming a first tone signal having a first predetermined wave shape indicative of the musical note to be synthesized, a second wave shaping means responsive to the musical instrument signals for forming a second tone signal having a second predetermined wave shape indicative of a drum beat of predetermined frequency and forming a portion of the rhythm pattern to be synthesized, a third wave shaping means responsive to the musical instrument signals for forming a third tone signal having a third predetermined wave shape indicative of a snare drum sound and forming a portion of the rhythm pattern to be synthesized, and means for combining the first, second and third signals into a composite signal; and
speaker means responsive to the composite signal for forming sound waves comprising the preselected repetitive rhythm pattern and musical notes determined by operation of the keyboard means.

4,226,156
PERCUSSION INSTRUMENT WITH ELECTRIC PICKUP UNIT
Seiichi Hyakutake, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan
Filed Mar. 5, 1979, Ser. No. 16,957
Claims priority, application Japan, Mar. 9, 1978, 53-29083[U]
Int. Cl.³ G10H *3/14*
U.S. Cl. 84—1.14 **9 Claims**



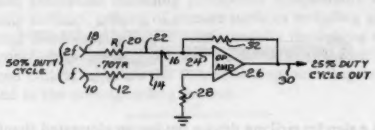
1. An improved electric percussion instrument, comprising:
a cylindrical drum frame having an open end;
a drum head made of a flexible material and covering, in a stretched state, said open end of said drum frame;
a mute assembly including a rigid substrate and flexible mute element mounted on said substrate;
a mechanical-electric converter embedded in said substrate of said mute assembly and including a vibration responsive pickup element;
means for positioning said mute assembly in such a manner that said mute element faces one surface of said drum head;
manually adjustable means for urging said mute assembly towards said drum head such that said mute element is placed in tight pressure surface contact with said one surface of said drum head; and
an electric signal processing circuit coupled to said mechanical-electric converter.

4,226,157

WAVEFORM SYNTHESIS FOR AN ELECTRONIC MUSICAL INSTRUMENT

George S. Klaiber, Tonawanda, N.Y.; Anthony C. Ippolito, DeKalb, and William R. Hoskinson, Geneva, both of Ill., assignors to The Wurlitzer Company, DeKalb, Ill.

Filed Jun. 20, 1978, Ser. No. 917,307
Int. Cl.[3] G10H *1/06*
U.S. Cl. 84—1.22 10 Claims



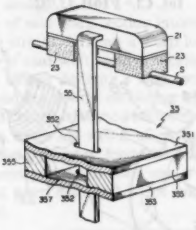
1. In an electronic musical instrument, a first bus having a nominal footage B and carrying first rectangular waves of 50% duty cycle, a second bus having a nominal footage of ½B and carrying second rectangular waves of 50% duty cycle, output means, and means for combining said first and second waves as rectangular waves at relative amplitudes A and about 0.707A to said output means to produce an output wave with a harmonic spectrum of a 25% duty cycle rectangular wave of footage B.

4,226,158

DAMPER ASSEMBLY FOR KEYBOARD MUSICAL INSTRUMENTS

Eiji Kobayashi, and Hiroyoshi Takahashi, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Dec. 29, 1978, Ser. No. 376
Claims priority, application Japan, Jan. 14, 1978, 53/3027[U]; Jan. 14, 1978, 53/3028[U]
Int. Cl.[3] G10C *3/16*
U.S. Cl. 84—239 6 Claims



1. An improved damper assembly for a keyboard musical instrument comprising

a vertically extending damper holder having a free bottom end which is operable by an associated key, said damper holder having one longitudinal section which is non-circular in traverse cross section,

a damper head mounted on said damper holder and facing an associated string for being engagable with the string, and

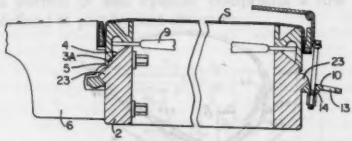
a fixed damper block arranged below said associated string and being provided with a respective vertical opening for said damper holder, through which said one longitudinal section of said damper holder is movable, said one vertical opening being similar in cross section to said longitudinal section of said damper holder.

4,226,159

BANJO CONSTRUCTION

Charles T. Lowe, 5165 Torrey Rd., Flint, Mich. 48507

Filed Oct. 28, 1975, Ser. No. 626,235
Int. Cl.[2] G01D *1/10*
U.S. Cl. 84—272 8 Claims



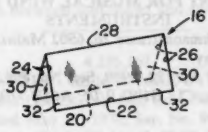
1. In a banjo construction comprising an annular banjo rim having an annular banjo tone ring mounted thereon for contacting the underside of the banjo skin, the improvement which comprises: a pair of radially extending sound conducting braces whose radially outer ends bear against said tone ring with one brace being disposed adjacent the banjo neck and the other brace being disposed adjacent the banjo tailpiece and a sound post extending between and being disposed in clamped relationship to the radially inner ends of said braces.

4,226,160

UNITARY PICK HAVING MULTIPLE PICKING SURFACES

Andrew V. Picciochi, 208 Andrews Rd., Mineola, N.Y. 11501

Filed Nov. 13, 1978, Ser. No. 959,927
Int. Cl.[3] G10D *3/16*
U.S. Cl. 84—322 12 Claims



1. A pick for use with stringed musical instruments comprising:

a unitary body being a substantially planar member having at least a pair of oppositely disposed edges,

a resilient fold provided in said member creasing the same intermediate said oppositely disposed edges to delineate a pair of relatively spaced pick blades of said unitary body connected at and depending from said resilient fold, each of said pick blades carrying one of said oppositely disposed edges and angularly diverging from said fold relative to the other of said pick blades such that when the folded body is grasped in the area of said fold the pick blades may be varied in relative spacing and said edges are disposed in their normally spaced apart relation for multiple sequential sound-generating contact of said edges with a musical instrument string each time said pick is moved across the string.

4,226,161

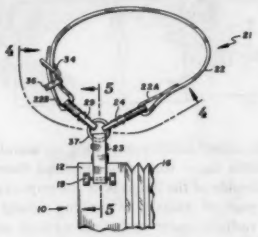
ACCORDION SUPPORT APPARATUS

Elmer A. Goetsch, 3119 Grimes Ave. North, Minneapolis, Minn. 55422

Filed Sep. 21, 1978, Ser. No. 944,575
Int. Cl.[3] G10G *5/00*
U.S. Cl. 84—376 A 18 Claims

1. An apparatus for supporting an accordion on a player, said accordion having an upper end and a lower end, and shoulder strap means connected to the upper and lower end

adapted to be located about at least one shoulder of a player, comprising: a flexible belt adapted to surround the waist of the player, means for adjusting the length of the belt, said belt having a first end and a second end, a flexible link having a first end and a second end, means connecting said first end of the link to the lower end of the accordion to allow the link to move relative to the accordion, ring means pivotally connected to



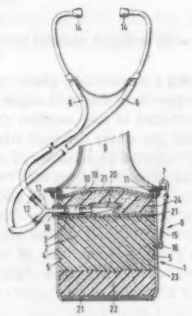
the second end of the link allowing the ring means to pivot relative to the second end of the link, first hook means attached to the first end of the belt, said first hook means being releasably connected to the ring means, and second releasable hook means attached to the second end of the belt, said second hook means being releasably connected to the ring means whereby the belt, ring means, and link support the accordion from the waist of the player.

4,226,162

ATTACHMENT FOR MUSICAL WIND OPERATED INSTRUMENTS

Alfred Ebach, Uthmannstrasse 26, 6502 Mainz, Kostheim, Fed. Rep. of Germany

Filed Apr. 20, 1978, Ser. No. 898,389
Int. Cl.[3] G10D *9/06;* **A61B** *7/02*
U.S. Cl. 84—400 **6 Claims**



1. An attachment for a musical wind instrument, such as trumpet or the like which has a bell-type end, comprising

a hollow body having rigid side walls and two unobstructed open ends, one end adapted to fit within the bell-type end of the trumpet,

a stethoscope having membrane means and two earpieces, said membrane means being positioned within the hollow body between the ends of said body, said earpieces being located externally of said body,

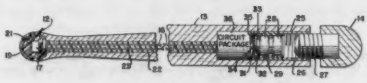
the internal volume of said body not occupied by said membrane means being filled with air-permeable acoustically damping material.

4,226,163

ILLUMINATED DRUMSTICKS

James D. Welcomer, 4979 Hamilton Dr., Paxton Hollow Estates, Box 106, Harrisburg, Pa. 17111

Continuation-in-part of Ser. No. 789,628, Apr. 21, 1977, abandoned. This application Feb. 27, 1979, Ser. No. 15,817
Int. Cl.[3] G10D *13/00*
U.S. Cl. 84—422 S **4 Claims**



1. In a slender striking device having an elongated shank for use with a percussion instrument the elongated shank having a circumference which is small relative to its length throughout its length, the combination comprising:

an impact resistant tip means for striking said percussion instrument, said tip means comprising an epoxy lens and continuing the slender striking device, said tip means having a circumference which is substantially equal to the circumference of the elongated shank,

light emitting diode means within said tip for illuminating said tip,

protection means for said light emitting diode, said protection means comprising a clear epoxy potting compound filling a space between said light emitting diode and said lens, said lens, potting compound, and light emitting diode comprising a solid tip which is free of voids allowing said striking device to be used as a drumstick for repeatedly striking a percussion instrument,

a power supply for said light emitting diode,

a bore in said shank and conductive means in said bore for coupling said power supply to said light emitting diode, and

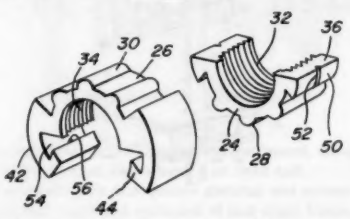
means for selectively connecting said power supply to said light emitting diode.

4,226,164

SPLIT THREADED COUPLING NUT

Alton L. Carter, 325 Claremore, Corpus Christi, Tex. 78412

Filed Jan. 10, 1979, Ser. No. 2,706
Int. Cl.[2] F16B *33/02*
U.S. Cl. 85—33 **3 Claims**



1. A split threaded coupling nut comprising a pair of first and second coextensive and generally semi-cylindrical nut halves, said nut halves including exterior surface portions engageable by hand or tools to facilitate turning of said halves, together, as a unitary nut, said nut halves including coextensively threaded inner surfaces, said first nut half including arc end generally radially outwardly projecting inner lugs including first abutment surfaces remote and facing in directions opposite from the corresponding arc end faces of said first nut half, and outer surfaces extending between said arc end faces and first abutment surfaces, the arc ends of said second nut half including outer peripheral extensions projecting outwardly therefrom and terminating outwardly in radially inwardly projecting

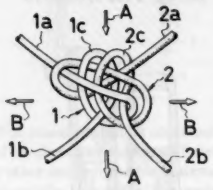
outer lugs including second abutment surfaces remote and facing in directions opposite from the corresponding arc end faces of said second nut half, and inner surfaces extending between said second abutment surfaces and arc end faces, said first and second abutment surfaces being abuttingly engaged with each other and said first and second halves being separable upon relative shifting in axial directions, said halves being constructed of substantially rigid, but slightly resilient material, the outer surfaces of said inner lugs and the inner surfaces of said extensions including juxtaposed substantially coaxial arcuate surfaces, one set of arcuate surfaces including grooves formed therein extending circumferentially therealong and the other set of arcuate surfaces each including a central projection spaced closely adjacent the corresponding outer lug and snap seated in the corresponding groove.

4,226,165

FISHING NET

Jiro Maruyama, Hakodate, and Seiji Suzuki, Yokkaichi, both of Japan, assignors to Hakodate Seimo Sengu Co., Ltd., Japan

Division of Ser. No. 752,848, Dec. 21, 1976, Pat. No. 4,139,225.
This application Nov. 30, 1978, Ser. No. 965,105
Claims priority, application Japan, Dec. 23, 1975, 50/152891
Int. Cl.³ D04G *1/02;* A01K *69/02*
U.S. Cl. 87—12 **3 Claims**



1. A fishing net having a plurality of knots formed by intertwining warps and wefts, each of said knots comprising:
(a) a section of said warp and a section of said weft intertwined therewith;
(b) opposite ends of said warp section defining first and second leg strings;
(c) opposite ends of said weft section defining third and fourth leg strings;
(d) a portion of said warp section intermediate said first and second leg strings defining a warp loop;
(e) a portion of said weft section intermediate said third and fourth leg strings defining a weft loop; and
(f) each of said leg strings extending in a different direction such that a crotch is formed between each adjacent pair of leg strings, each leg string of each adjacent pair of leg strings being separated from the remaining leg string of said adjacent pair by at least one of said warp and weft loops, said warp and weft loops running in parallel with each other.

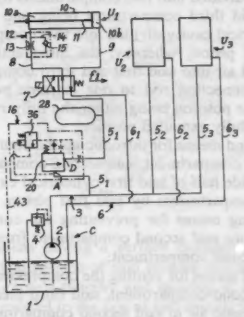
4,226,166

CONTROL UNIT FOR THE SUPPLY OF A WORK UNIT FED IN PARALLEL FROM A HYDRAULIC STATION COMMON TO OTHER UNITS

Roger F. Frank, Cluses, France (74300)

Filed Feb. 14, 1978, Ser. No. 877,726
Claims priority, application France, Feb. 16, 1977, 77 05166
Int. Cl.³ F15B *11/16, 13/06*
U.S. Cl. 91—5 **5 Claims**

1. In an arrangement having a plurality of hydraulically operable work units fed from a common hydraulic pressure source through parallel supply conduits, the improvement comprising:
a control unit in the supply conduit of at least one of said work units, there being a fluid distributor and a pressure accumulator between said control unit and said one work unit;
said control unit comprising a block defining a cylinder having an inlet form and an outlet to said supply conduit, said cylinder having an obturator therein urged by resilient means to a position in which it closes communication between said inlet and outlet, said resilient means being in a portion of said cylinder comprising a first chamber defined in part by said obturator;



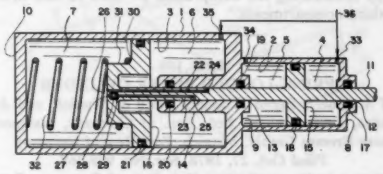
a relief valve in said block and a second conduit means communicating with said chamber, said outlet and said relief valve; and
opposite sides of said relief valve communicating with further conduits leading, respectively, to a return tank and to said inlet, said further conduit leading to said inlet being arranged so that pressure in said inlet tends to close said relief valve, said relief valve, when open, providing communication between said outlet and said return tank.

4,226,167

AIR-SPRING RETURN AIR CYLINDER

Yon S. Lew, 7890 Oak St., Arvada, Colo. 80005

Filed May 17, 1978, Ser. No. 907,030
Int. Cl.³ F15B *15/22;* F01B *7/00*
U.S. Cl. 91—399 **4 Claims**



1. An air cylinder comprising:
(a) a cylinder having a first cylindrical cavity engaged by a first piston and a second cylindrical cavity engaged by a second piston, said first and second pistons rigidly connected to a connecting rod engaging a hole disposed on one end of said cylinder, whereby, said connecting rod extends from and retracts into said cylinder depending on the force exerted on said first and second pistons by compressed air introduced into said cylinder; (b) a first means for introducing the compressed air into and venting from first and third compartments, said first compartment being one side half of said first cylindrical cavity divided into compartments by said first piston, and said third compartment being one side half of said cylindrical cavity divided into two compartments by said second piston; whereby the introduction of the compressed air into said first and third compartments pushes said connecting rod to one extreme position, said one extreme position being either

the fully retracted position or the fully extended position; by a second piston, said first and second piston rigidly connected to a connecting rod engaging a hole disposed on one end of said cylinder, whereby, said connecting rod extends from and retracts into said cylinder depending on the force exerted on said first and second pistons by the compressed air introduced into said cylinder;

(b) a first means for introducing the compressed air into and venting from a first and third compartments, said first compartment being one side half of said first cylindrical cavity divided into two compartments by said first piston, and said third compartment being one side half of said cylindrical cavity divided into two compartments by said second piston; whereby, the introduction of the compressed air into said first and third compartments pushes said connecting rod to one extreme position, said one extreme position being either the fully retracted position or the fully extended position;

(c) a second means for introducing the compressed air into a second compartment, said second compartment being the other side half of said first cylindrical cavity divided into two compartments by said first piston, said first means including means for preventing the compressed air entered into said second compartment from flowing out of said second compartment;

(d) a third means for venting the compressed air entered into said second compartment, said third means allowing the compressed air in said second compartment to vent only when said connecting rod is located at the other extreme position, said the other extreme position being the opposite to said one extreme position; whereby, the compressed air introduced into said first and third compartments pushes said connecting rod to said one extreme position, said one extreme position being maintained by the force exerted on said second piston by the compressed air in said third compartment, while the force exerted on two sides of said first piston by the compressed air in said first and second compartments canceling one another; upon venting said first and third compartments, the compressed air trapped in said second compartment by means of said second means pushes said connecting rod to said other extreme position, said compressed air trapped in said second compartment being vented by means of said third means only after said connecting rod is moved to said other extreme position; whereby, said connecting rod can be facily moved back to said one extreme position again by introducing the compressed air back to said first and third compartments.

4,226,168

SPRING-LOADED BRAKE CYLINDER

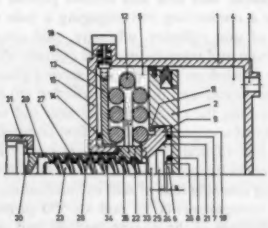
Josef Staltmeir; Bernd Wosegien, both of Munich, and Julius Nadas, Eching, all of Fed. Rep. of Germany, assignors to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 27, 1978, Ser. No. 955,368

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748540

Int. Cl.³ F16J *1/10*; F01B *31/00*

U.S. Cl. 92—130 A **14 Claims**



1. A spring-loaded brake cylinder particularly for a railway vehicle and comprising a housing, a piston slideable within said housing, a threaded shaft and nut carried on said threaded shaft between said piston and a piston rod, said threaded shaft having a non-self-locking thread, one of said shaft and nut being rotatable and the other being non-rotatable, a loading spring within said housing having one end rotatably supportable by a portion of said housing and secured against axial displacement and a second end acting against said piston, means for coupling said spring second end and the rotatable one of said nut and shaft, said rotatable one capable of receiving a load imposed by said spring and of rotating in such a manner to permit torque to be transmitted to said housing, and rotary coupling means in the path of torque resulting from the force exerted by said spring upon said shaft and nut so that said spring and the rotatable one of said nut and shaft are free to rotate upon selective operation of said rotary coupling means.

4,226,169

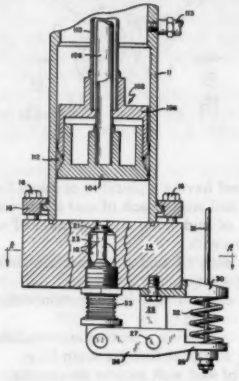
ADJUSTABLE EXPANDABLE CRYOGENIC PISTON AND RING

Peter O. Mazur, Aurora, and Carl B. Pallaver, Woodridge, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 5, 1978, Ser. No. 912,784

Int. Cl.³ F16J *1/06, 9/10*

U.S. Cl. 92—206 **2 Claims**



1. In a reciprocating engine comprising

a cylinder **(11)**,

a piston **(102)** reciprocable in said cylinder consisting of an inner portion **(104)** and an outer portion **(106)**,

a sealing ring **(112)** compressible between the inner portion **(104)** and the outer portion **(106)** of the piston **(102)** against the inner wall of the cylinder **(11)** and

means for adjusting the compression on said sealing ring **(112)** to vary the pressure of the sealing ring against the wall of the cylinder,

the improvement wherein said means for adjusting the compression is operable while the piston is reciprocating and includes

a first rod **(108)** attached to the inner portion **(104)** and having a threaded upper end,

a second rod **(110)**, coaxial with the first rod **(108)**, attached to the outer portion **(106)**,

an internally threaded sleeve **(124)** attached to the second rod **(110)** which threadedly engages said threaded upper end,

an index wheel **(126)** including a sleeve **(128)** surrounding threaded sleeve **(124)** in mating sliding engagement therewith, the mating surface being noncircular in cross section

and permitting relative longitudinal movement therebetween and

means (142) for rotating index wheel (126) whereby relative longitudinal movement of inner portion (104) and outer portion (106) of piston (102) varies the compression of sealing ring (112) against the cylinder wall.

4,226,170
METHOD FOR MANUFACTURING A LINED CONTAINER

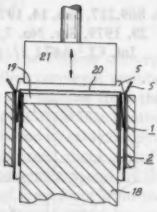
Od W. Christensson, Veddestavägen 7 - 9, S-175 62 Järfälla, Sweden

Division of Ser. No. 871,497, Jan. 23, 1978, Pat. No. 4,184,608. This application Oct. 18, 1978, Ser. No. 952,296

Claims priority, application Sweden, Jan. 26, 1977, 008068; Mar. 15, 1977, 028991

Int. Cl.³ B31B 7/00

U.S. Cl. 93—36.01 14 Claims



1. In a method of manufacturing a container having an outer container tube of cardboard or similar stiff material and a lining of plastic or any other easily formable material provided in the said outer container tube, one end of the container exposing an openable lining side and the opposite end intended to be filled and closed, the steps of: providing a tubular outer container blank having bottom close flaps, the combined surface of which is at least as large as the bottom surface of the container and top flaps, and the total surface of which is substantially less than the cross sectional area of the container, providing a separate linking blank in the form of an open lining blank, introducing the lining blank into the outer container blank so that the upper side thereof is positioned at or adjacent the upper edge of the container blank, pressing the lining blank from the openable side back some distance into itself to provide a lining rib extending round the openable side, and securing the lining blank in the outer container blank by folding the top flaps of the outer container blank in and securing them to the said lining rib.

4,226,171
MANUFACTURE OF PAPER TUBES

Michael Cuffe, Flat 6, 26 E. Crescent St., McMahons Point, New South Wales 2060, Australia

Filed Jul. 10, 1978, Ser. No. 923,069

Claims priority, application Australia, Jul. 15, 1977, PD0866

Int. Cl.³ B31C 3/00

U.S. Cl. 93—81 MT 11 Claims

1. A machine for manufacturing paper tubes comprising

means for rotatably mounting a roll of paper,

paper feed rollers arranged in juxtaposition to said mounting means for the roll of paper,

a rotatable turret,

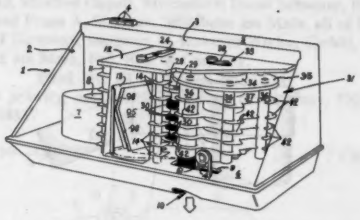
at least one tube forming spindle carried by said turret,

said turret being rotatable to move said spindle to a tube forming position;

a paper drive roller in juxtaposition to the position of said tube forming spindle when in said tube forming position, said paper drive roller being normally in working engagement with said spindle to engage and drive the paper between said roller and said spindle,

a rotatable tube ejection means arranged in juxtaposition to said tube forming spindle,

said turret being rotatable to move said spindle away from said tube forming position and out of engagement with said paper drive roller into a tube ejection position in engagement with said ejection means,



said ejection means having a surface engagable with the outer cylindrical surface of said spindle and thus with a formed tube carried thereby and moving in a direction substantially parallel to the axis of said spindle for ejection of a formed tube from said spindle,

said turret then being rotatable in the opposite direction to move said spindle away from said ejection means and back to engagement with said drive roller.

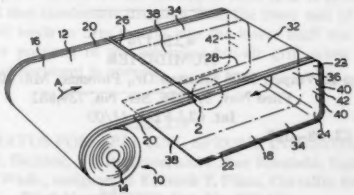
4,226,172
METHOD FOR MANUFACTURING A SQUARE BOTTOM BAG

Marinus J. M. Langen, Rexdale, and Edgar H. Strauss, Toronto, both of Canada, assignors to H. J. Langen & Sons Ltd., Toronto, Canada

Division of Ser. No. 910,737, May 30, 1978, Pat. No. 4,184,413. This application Dec. 13, 1978, Ser. No. 969,154

Int. Cl.³ B31B 37/02

U.S. Cl. 93—35 SB 14 Claims



1. A method of forming a square bottom bag from a bag forming section of a web of bag forming material which has a length in a first direction and a width in a second direction at right angles to said first direction and which includes a main panel extending in said first direction and bounded on either side by a side closure forming panel comprising the steps of:

(a) driving said web in said first direction and bending said web upon itself across its width, as it is driven in said first direction to an open U-shaped configuration in which said main panel forms unitary, serially connected, front, bottom and back walls which are closed in the configuration which they will assume when said bag is open;

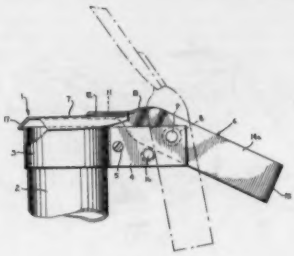
(b) supporting said main panel in said open U-shaped configuration;

(c) folding said side closure forming panels toward one another to an overlapping relationship and securing said side closure forming panels with respect to one another in said overlapping relationship to form side walls of a bag.

4,226,173
PROTECTIVE CAP FOR AN EXHAUST PIPE

Mostafa M. Khosropour, Oregon, Wis., assignor to Nelson Industries, Inc., Stoughton, Wis.

Filed May 7, 1979, Ser. No. 36,286
Int. Cl.³ F23L 17/02
U.S. Cl. 98—59 3 Claims

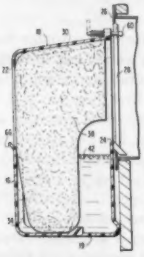


1. A protective cap for an exhaust pipe, comprising a generally U-shaped clamping member having a curved section disposed around the outer surface of an exhaust pipe adjacent the outer end thereof and having a pair of legs extending outwardly from the curved section, an arm, a cover secured to the arm and movable between a closed position where it encloses the outer end of the exhaust pipe to an open position, said arm including an inner section secured flatwise to the cover and lying in a substantial horizontal plane when the lid is in the closed position, said arm also including an outer section extending in a substantially vertical plane, and a twisted central section connecting the inner and outer sections, pivot means for pivotally connecting the outer section of said arm to said legs, and a stop mounted on said legs and disposed between said pivot means and said curved section in a position to be engaged by a first portion of the outer section of said arm to limit downward movement of the cover and space the cover out of contact with the outer end of the exhaust pipe when the cover is in the closed position, said stop being positioned to be engaged by a second portion of the outer section of the arm on opening of the cover to limit the open position of the cover.

4,226,174
HUMIDIFIER

James E. Vesper, 2408 Stratton Dr., Potomac, Md. 20854

Filed Nov. 8, 1976, Ser. No. 739,882
Int. Cl.³ F23L 13/00
U.S. Cl. 98—109 8 Claims

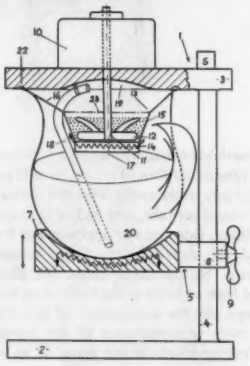


1. A room humidifier of the type adapted to be secured to a vertically disposed wall register comprising substantially rectilinear container means having top, bottom side, front and rear walls, said front and rear walls each having a single substantially rectilinear aperture, said apertures being aligned with each other and substantially coextensive with the upper half of said front and rear walls with the lower half of said front and rear walls in conjunction with said side walls and bottom wall defining a water reservoir, a plurality of ridges disposed on the opposing surfaces of said top and bottom walls defining vertically aligned pairs of grooves extending perpendicular to said front and rear walls, a plurality of vertically disposed ridges on the interior of the front wall beneath the aperture therein, said vertically disposed ridges being in alignment with the ridges on said bottom wall to define guide grooves which are continuous with the grooves on said bottom wall, a plurality of evaporation plates disposed in said pairs of grooves in spaced apart parallel relations to each other perpendicular to said front and rear walls, means for detachably connection said humidifier to said vertically disposed wall register and float means for indicating the water level in said container.

4,226,175
APPARATUS FOR MAKING HOT BEVERAGES

Steven D. Sandor, 19 Woodmount Crescent, Ottawa, Canada (K2E 5P9)

Division of Ser. No. 869,217, Jan. 14, 1978. This application Jan. 29, 1979, Ser. No. 7,517
Int. Cl.³ A47J 31/42
U.S. Cl. 99—286 17 Claims



1. An apparatus for making beverages from a commodity to be processed therein, comprising a pervious container (15, 115) having motivated blade means (12, 112) in said pervious container operable at selective speeds for respective roasting, grinding and stirring phases of a commodity in said pervious container;

heating means (H_2 H_3) operable to heat a commodity for roasting thereof in said pervious container;

flow means for effecting passage of a heated fluid into said pervious container to permeate through a commodity ground therein to produce a beverage flow into a flask;

whereby a commodity may be heated and roasted at a preselected low blade means speed and ground at a preselected high blade means speed and subjected to flow of hot fluid therethrough while being stirred at a preselected low blade means speed to produce a beverage flow into a flask from said pervious container.

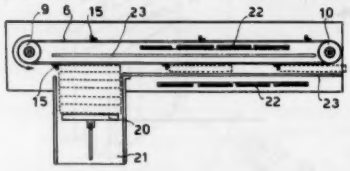
4,226,176
BREAD TOASTER

Giannino Macchi, Via Zini n. 13, Tradate (Varese), Italy

Filed May 1, 1979, Ser. No. 34,941
Int. Cl.³ A47J 37/08
U.S. Cl. 99—335 5 Claims

1. An automatic toaster comprising, in combination, an elongated horizontal parallelepipedal housing, said housing having adjacent one end thereof an opening for the introduc-

tion of bread slices to be toasted and adjacent the other end thereof an opening for the exit of toasted bread slices, means to insert automatically and one by one the bread slices to be toasted into said housing through the first opening from a stack of bread slices, two vertically spaced horizontal endless metal conveyor members disposed in the housing, rolls in the housing adjacent opposite ends of the housing about which said conveyor members circulate, said first opening being positioned so as to feed bread slices to said conveyor members at a location between said rolls an electric motor for driving one of said rolls in rotation to circulate said endless conveyor mem-



bers, cross members on the endless conveyor members and interconnecting the endless conveyor members to push bread slices lengthwise along the housing from the first opening to the second opening, electric resistance heating means for heating the bread slices conveyed by said conveyor members, fixed guide means to hold the bread slices out of contact with the electric resistance heating means and to position the bread slices along their path of movement from the first opening to the second opening, and time delay means for heating said heating means for a predetermined period of time prior to actuation of said motor.

4,226,177

PORTABLE GRILLING DEVICE

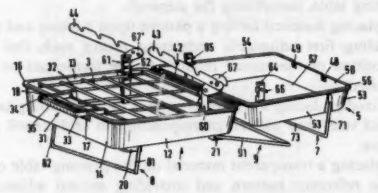
Klaus Schmidt, Ritterhude, Fed. Rep. of Germany, assignor to EWG Import u. Export GmbH & Co. Handelskommanditgesellschaft, Fed. Rep. of Germany

Division of Ser. No. 896,153, Apr. 13, 1978, Pat. No. 4,177,720. This application Apr. 2, 1979, Ser. No. 26,416

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1978, 2800857

Int. Cl.[3] A47J *37/00*

U.S. Cl. 99—372 **7 Claims**



1. A portable grill device comprising

first and second bowls hingedly connected to move between an overlying closure position, a generally right angular use position, and a generally horizontal use position,

a grate adapted to be connected in operational relation with each bowl, said grates being disposed in a generally coplanar attitude in the horizontal use position of said first and second bowls,

a front leg bail and a rear leg bail connected to said first bowl, and

a supplemental leg bail, connected to said second bowl, all said leg bails cooperating to support said first and second bowls in said horizontal use position, and said first bowl's leg bails cooperating to support said first and second bowls independently of said supplemental bail in said right angular use position, and

latch means secured to said first bowl and engageable by said supplemental bail to secure and positively latch said bowls in the overlying closure position.

4,226,178

HOT-AIR GRILLS

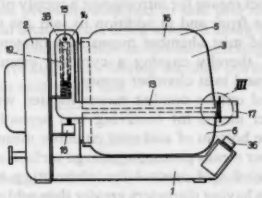
Hans-Juergen Geissler, Frankfurt am Main; Peter Mueller, Debring; Manfred Oppelt, Mistendorf; Horst Schoener, Bamberg, and Franz A. Stuetzer, Mühlheim am Main, all of Fed. Rep. of Germany, assignors to Rowenta-Werke, GmbH, Offenbach am Main, Fed. Rep. of Germany

Filed Jan. 29, 1979, Ser. No. 7,534

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1978, 2804817

Int. Cl.[3] A47J *27/00*

U.S. Cl. 99—447 **7 Claims**



1. In an electrical hot-air grill of a type comprising a chassis, a grilling compartment supported on the chassis and bounded by an upper shell and a lower shell, which may be separated from each other to open the grilling compartment, a blowing and heating apparatus mounted on the chassis and arranged to blow hot air into the grilling compartment, an improvement wherein the upper shell is supported removably on a frame, which is mounted pivotally to the chassis, so as to be removable from the frame without it being necessary to release a fastening element and so as to be pivotable up and down about a transverse axis, which is located so as to provide that the grilling compartment is opened when the upper shell thus is pivoted up and closed when the upper shell thus is pivoted down and that condensate dripping from the inner side of the upper shell tends to drip mostly into the lower shell but not onto outer portions of the electrical hot-air grill when the grilling compartment is opened.

4,226,179

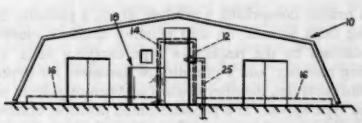
APPARATUS FOR APPLYING SPROUT INHIBITOR

Dwight M. Sheldon, III, Richland, and F. Lee Beezhold, Seattle, both of Wash., assignors to Kenneth T. Place, Corvallis, Oreg.

Filed Nov. 15, 1978, Ser. No. 960,876

Int. Cl.[3] A23B *4/04*

U.S. Cl. 99—475 **4 Claims**



1. Apparatus for creating an aerosol of a viscous liquid chemical agent at a high volumetric rate and small aerosol particle size and applying said aerosol to the surfaces of edible produce stored in an enclosure, said apparatus comprising:

(a) chemical agent supply means for providing a chemical constituent for an aerosol, said chemical agent supply means including heater means for heating said chemical agent within said chemical agent supply means and con-

trol means responsive to the temperature of said chemical agent for automatically controlling said heater means so as to maintain said chemical agent in said chemical agent supply means at a predetermined temperature in the liquid range of said chemical agent;

(b) atomizing means connected to said chemical agent supply means for atomizing said chemical agent into liquid droplets of different sizes having diameters both greater and less than a predetermined size, said atomizing means including ultrasonic nozzle means for mixing gas under pressure with said chemical agent and expanding the resultant mixture and means defining a resonator cavity associated with said nozzle means for ultrasonically subdividing said mixture, thereby forming said aerosol;

(c) separator means for removing from said aerosol those droplets of said liquid whose diameters are greater than said predetermined size, said separator means comprising vertically oriented cylindrically shaped mist chamber means for containing said mixture and ambient air supply inlet duct means for introducing a supply of circulating air separate from and in addition to said gas under pressure into said mist chamber means in a tangentially entering stream, thereby causing a cyclonic circulatory pattern within said mist chamber means;

(d) aerosol uptake conduit means located within said mist chamber means for receiving said aerosol at a position near the bottom of said mist chamber means;

(e) scrubber means presenting a large surface area in the path of flow of said aerosol for obstructing and collecting droplets having diameters greater than said predetermined size, said scrubber means being located within said aerosol uptake conduit means; and

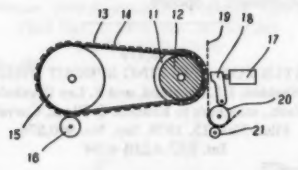
(f) discharge means for connecting to said enclosure and exhausting said aerosol from said separator means into the interior of said enclosure.

4,226,180

TYPE SEPARATOR IN A HAMMER ACTUATED PRINTER

Hirotoshi Matsui, Shiki, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 22, 1978, Ser. No. 880,092
Claims priority, application Japan, Feb. 22, 1977, 52-21661[U]
Int. Cl.³ B41J *1/20, 9/38, 27/12*
U.S. Cl. 101—111 **3 Claims**



1. A printer comprising a printing drum, a plurality of type carrying belts secured on said printing drum, a plurality of types carried by the respective type carrying belts, a print receiving member, and a plurality of hammers for depressing said print receiving member toward said printing drum when a selected type appears at a predetermined position, comprising:

a plurality of separator strips formed on the periphery of said printing drum for separating said plurality of type carrying belts from each other, said separator strips extending upwardly from the surface of said printing drum beyond the outer extremity of the types on said type carrying belts;

an idler pulley operatively disposed adjacent to and substantially parallel with said printing drum, said plurality of type carrying belts extending between said idler pulley and said printing drum;

an ink roller operatively disposed adjacent to said idler pulley for coating said types with ink; and

said hammers being operatively positioned to depress said print receiving member towards said printing drum and between said separator strips to impart an image of the types thereto;

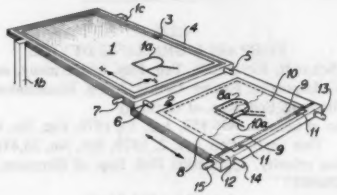
whereby said spacing strips being shaped and spaced to prevent said print receiving member from accidentally impinging upon said types while protecting the surface of said print receiving member when depressed by said hammers, and said ink roller supplying ink to said types adjacent said idler pulley to prevent linking of said spacing strips.

4,226,181

METHOD AND APPARATUS FOR ADJUSTING THE POSITION OF A STENCIL RELATIVE TO A PRINTING TABLE

Sylve J. D. Ericsson, Tumba, Sweden, assignor to Svecia Silkscreen Maskiner AB, Norsborg, Sweden

Filed Apr. 17, 1978, Ser. No. 897,743
Claims priority, application Sweden, Apr. 19, 1977, 7704459
Int. Cl.² B41F *1/34, 15/36;* **B41L** *13/02*
U.S. Cl. 101—129 **5 Claims**



1. A method for adjusting the position of a stencil relative to a printing table, comprising the steps of:

(a) placing a stencil having a pattern upon a frame and providing first adjustable registering means such that the position of the stencil relative to the frame can be adjusted;

(b) fixedly placing a reference pattern on the printing table, said reference pattern corresponding to said stencil pattern;

(c) placing a transparent material on the printing table over the reference pattern and providing second adjustable registering means such that the position of the transparent material relative to the printing table can be adjusted;

(d) transferring the stencil pattern to the transparent material;

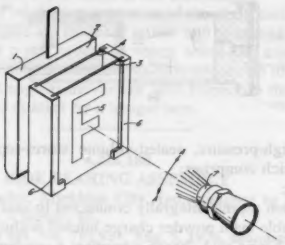
(e) adjusting the second registering means to displace the transparent material relative to the printing table so that the positions of the transferred stencil pattern and the reference pattern coincide, and measuring the amount of such adjustment; and

(f) adjusting the first registering means by the same measured amount to displace the stencil relative to the frame in the same manner and by an amount corresponding to the displacement of said transparent material to thereby provide registration between said stencil pattern and said reference pattern.

4,226,182
SPRAYING

Kennet Danielsen, Vanloese, and Torben Nielsen, Ballerup, both of Denmark, assignors to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

Filed Mar. 13, 1979, Ser. No. 20,139
Claims priority, application United Kingdom, Mar. 13, 1978, 9837/78
Int. Cl.² B41M *1/12*
U.S. Cl. 101—129 **3 Claims**

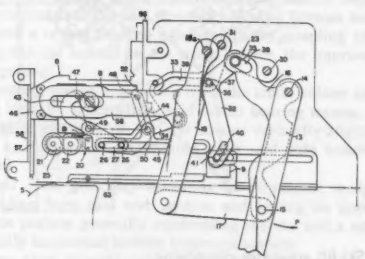


1. A method of spraying a liquid to form an image on an article comprising positioning the article with the surface to receive the image substantially vertical and parallel with and spaced away from the adjacent one of a pair of stencils by a distance of 2 to 6 mm, each apertured in the shape and size of the image to be reproduced, said pair of stencils being spaced apart in parallel planes by a distance of between 2 and 8 mm, and spraying the liquid onto the article through the pair of stencils.

4,226,183
INK SUPPLY DEVICE FOR LABEL PRINTING MACHINE

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato, Tokyo, Japan

Filed Sep. 5, 1978, Ser. No. 939,665
Int. Cl.² B41F *1/46, 1/50*
U.S. Cl. 101—295 **6 Claims**



1. A label printing machine, including:

a frame; a platen supported by said frame;

a printing head, including type surfaces opposable to said platen; means for moving said printing head toward said platen for engaging said type surfaces against a label on said platen and for moving said printing head away from said platen;

an ink supply device for inking said type surfaces; said ink supply device comprising an ink roller for being rolled over said type surfaces; an ink roller holding mechanism for holding said ink roller to rotate as said ink roller moves over said type surfaces;

said means for moving being further connected with said ink roller holding mechanism for moving said holding mechanism back and forth through said frame and across said type surfaces as said printing head moves toward and away from said platen;

guiding means for guiding said holding mechanism for moving said ink roller over said type surfaces with a predetermined pressure against said type surfaces as said guide mechanism also moves with said printing head; said guiding means including a guide element attached to said holding mechanism;

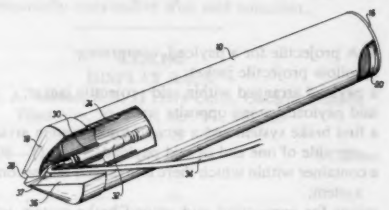
a guide link rockably attached to said printing head and including a guide path means for being engaged by said guide element; said guide path means being shaped and oriented for guiding said guide element and said holding mechanism attached thereto across said type surfaces and for regulating the spacing between the axis of said ink roller and said type surfaces as said guide path means is engaged by said guide element;

said guide means further comprising a first and a second spaced apart rocking link; both said rocking links having one portion pivotally attached to said printing head, and said pivotal attachments being arrayed along the direction of motion of said ink roller across said printing head types; both said rocking links having another portion pivotally attached to said guide link.

4,226,184
PRIMER

Sten H. Ljungberg, Stockholm, Sweden, assignor to Nitro Nobel AB, Gyttorp, Sweden

Filed Mar. 13, 1978, Ser. No. 885,578
Claims priority, application Sweden, Mar. 18, 1977, 7703136
Int. Cl.² C06C *5/06*; F42B *3/00*
U.S. Cl. 102—24 R **5 Claims**



1. A primer intended to reinforce the explosive power of a detonator, comprising,

a cylindrical casing having closed ends and containing an explosive, and

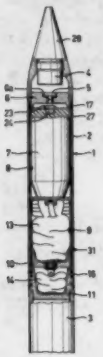
a device on one of said ends of said casing for centering and frictionally retaining a detonator in a predetermined position in relation to said casing,

said device having thereon a cylindrical tube extending axially of said casing with one end of said tube in communication with the bore in said casing, and with the opposite end of said tube being spaced axially inwardly from the outer end of said device and registering with a central opening in said outer end of said device, said tube having an axial bore disposed to receive and fit snugly around and envelop the peripheral surface of said detonator adjacent one end thereof so that the detonator, irrespective of its length, when retained in said tube, partly protrudes at its opposite end from said tube into direct contact with the explosive in said casing,

said device having in its outer surface an open groove for guiding an ignition fuse, which projects from the detonator that is retained in said tube, said groove communicating at one end with said central opening in said device, and with said opposite end of said tube, and extending laterally and rearwardly thereof to guide said fuse rearwardly and beneath the outer surface of said device so as to be pro-

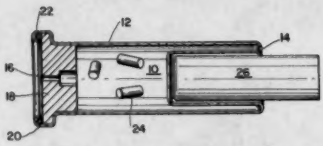
tected thereby against external forces at least adjacent said one end of the casing.

4,226,185
PROJECTILE WITH A PAYLOAD
Bruno Tobler, Wallisellen, and Hugo Sigrist, Hinwil, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland
Filed Aug. 21, 1978, Ser. No. 935,701
Claims priority, application Switzerland, Sep. 2, 1978, 10720/78
Int. Cl.[3] F42B *13/40*
U.S. Cl. 102—35.4 8 Claims



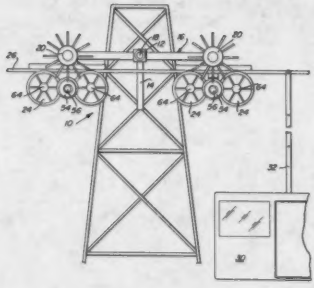
1. A projectile for a payload, comprising:
a hollow projectile jacket;
a payload arranged within said projectile jacket;
said payload having opposite ends;
a first brake system and a second brake system arranged to one side of one end of said payload;
a container within which there is arranged said second brake system;
means for connecting said second brake system with said payload;
said first brake system being arranged externally of said container containing said second brake system;
means for connecting said first brake system with said container;
a first explosive charge and a second explosive charge arranged towards the other side of the other end of said payload;
a drive disk arranged at said other side of said payload;
said drive disk separating said first explosive charge and said second explosive charge from one another;
said first explosive charge serving for releasing said first brake system;
said second explosive charge serving for releasing said second brake system;
said drive disk, said payload, and said container with said second brake system being arranged within said projectile jacket to assume a first position lengthwise of said projectile jacket prior to ignition of said first explosive charge; and
means provided for said projectile jacket for defining a latching location within the projectile jacket for retaining the drive disk, the payload and the container in a second position within the projectile jacket which is spaced axially of said first position lengthwise of said projectile jacket after igniting the first explosive charge.

4,226,186
SEALED-VOLUME CARTRIDGE
William P. Peck, La Plata, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 13, 1978, Ser. No. 950,944
Int. Cl.[3] F42B *5/10*
U.S. Cl. 102—38 PP 3 Claims



1. A high-pressure, sealed-volume stores-separation cartridge, which comprises:
a casing;
an ignition means, integrally connected to said casing; and
an ignitable main powder charge housed within said casing, and wherein said charge comprises a condensible propellant formulation consisting essentially from about 65 to about 85 weight percent of potassium perchlorate, from about 10 to about 20 weight percent of a high-energy material selected from the group consisting of light metals and light-metal compounds, and a resin binder selected from the class consisting of polybutadiene, polysulfide, and polyethylene.

4,226,187
SKI LIFT APPARATUS AND SAFETY DEVICE
Rex E. Paulsen, Littleton, and Harold Moser, Denver, both of Colo., assignors to SDI Welding Corporation, Dillon, Colo.
Filed Oct. 23, 1978, Ser. No. 953,355
Int. Cl.[3] B61B *11/00*
U.S. Cl. 104—182 10 Claims



1. Ski lift apparatus comprising:
a main support;
at least one beam carried by the support;
a rope-carrier assembly mounted on the beam and including at least two peripherally grooved sheaves;
a continuous rope carried by the assembly for translation in the direction of the longitudinal axis of the rope;
a vehicle carrier having a generally vertical hanger bar provided at its upper end with a laterally extending hanger arm fixedly secured at its free end to the rope;
a rope guard mechanism including a base connected to the beam and a plurality of guard fingers movably mounted on the base;
the free ends of the fingers being located adjacent to the rope-carrier assembly at the side remote from the main support and overlapping and spaced laterally from the

upper outer margin of at least one of the sheaves a distance substantially less than the diameter of the rope to constitute barriers to positively prevent the rope from falling outward from the assembly;

the guard fingers lying in a generally vertical plane in the path of travel of the hanger arm and being displaceable by contact of the arm about their movable connections with the base in the direction of movement of the arm;

the base includes a bearing mounting;

an enclosure surrounds the mounting;

a rotatable shaft is journaled in the mounting;

a hub is fixed on the outer portion of the shaft; and

the guard fingers are mounted on the hub to extend radially and define a star wheel to rotate about the axis of the bearing mounting, and are resiliently connected to the hub for limited angular movement with respect to the hub in response to contact by a hanger arm.

4,226,188

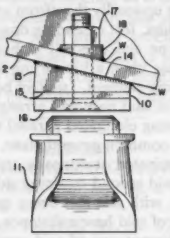
SIDE BEARING ASSEMBLY

Richard C. Snyder, Michigan City, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Continuation of Ser. No. 711,937, Aug. 5, 1976, abandoned. This application Aug. 28, 1978, Ser. No. 937,685

Int. Cl.[2] B61F 5/14

U.S. Cl. 105—199 CB **4 Claims**



1. A shear resistant roll restraining means for arresting lateral rolling motion of a railway car having a truck including a transverse truck bolster beam, a transverse car bolster beam having divergent laterally and upwardly sloping bottom web sections, and a center bearing means pivotally coupling and supporting the car bolster on the truck bolster, the improvement comprising:

a side bearing means upstanding from the truck bolster and being laterally spaced from said center bearing means,

a wear plate assembly on said car bolster vertically aligned with and abuttably engageable with said side bearing means,

said wear plate assembly including an alignment wedge depending from said web section and having an upper surface portion generally conforming thereto and a substantially horizontal bottom abutment surface,

said wear plate assembly also including a horizontally extending wear plate supported below said bottom abutment surface,

means defining vertically extending and aligned openings in said wear plate, said wedge and said web section,

fastening means removably positioned within said vertically aligned openings and securing said wear plate to said wedge in vertical load transfer relation, and

weld attachment means extending substantially about the periphery of said upper surface portion of said wedge and integrally uniting said wedge and said web section independently of said fastening means, thereby to eliminate bending of said fastening means due to shearing action between said wedge and said upwardly inclined web section when said horizontal bottom abutment surface of said wedge engages said side bearing means.

4,226,189

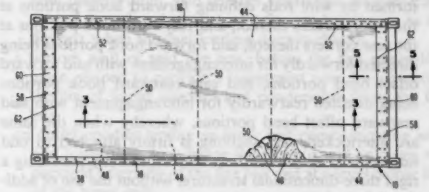
VEHICLE SIDEWALL AND ROOF CONSTRUCTION

William A. Bertolini, 115-65 Undercliff Ter., Kinnelon, N.J. 07405

Filed Mar. 20, 1978, Ser. No. 887,949

Int. Cl.[2] B61D 17/18

U.S. Cl. 105—423 **13 Claims**



10. An intermodal container including interconnected sidewalls and a roof, each sidewall comprised of panels of predetermined width and a height substantially equal to that of the container, each panel including an outer steel sheet adhesively secured to an inner plywood sheet, the front edges of the steel and plywood sheets of each panel being flush whereas the rear edge of said steel sheet extends beyond that of said plywood sheet to form a recess, the front flush edges of one panel fitting into said recess of an adjacent panel to form a lap joint and vertically spaced fasteners securing adjacent panels through said lap joints, said roof including inner plywood boards of predetermined width and length substantially equal to the width of said container and a one-piece seamless water-impervious outer roof skin adhesively secured to said plywood boards substantially coextensive with said container.

4,226,190

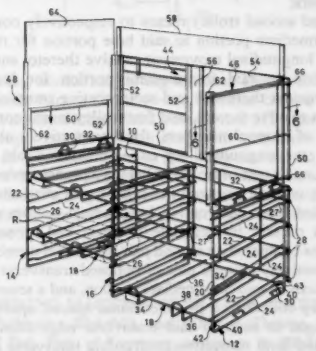
DISPLAY RACK

Richard D. A. Ashton, R.R. 1, Terra Cotta, Ontario, Canada

Filed Nov. 20, 1978, Ser. No. 962,168

Int. Cl.[2] A47B 7/00

U.S. Cl. 108—11 **8 Claims**



1. A display rack for displaying merchandise for sale, and storing additional merchandise, said rack comprising;

a shelving back wall;

at least two shelving side walls having forward and rearward edges and lower and upper edges;

hinge means on said rearward edges interconnecting said side walls with said back wall, whereby said side walls may be folded flat against said back wall, and may be swung apart when erected;

shelving support means integrally formed on one said side

walls formed by offset bend portions formed of wire rod adjacent the forward and rearward ends thereof;

generally rectangular removable shelves dimensioned to fit between two adjacent said side walls when the same are in their swung apart erected position, said shelves being disengageable from said side walls and back wall for shipping and storage, and,

interlock means on said shelves, at all four corners thereof, formed by wire rods defining forward hook portions at the front corners thereof, and rearward hook portions at the rear corners thereof, said forward hook portions being directed forwardly for interengagement with said forward offset bend portions, and said rearward hook portions being directed rearwardly for interengagement with said rearward offset bend portions, whereby when the same are interlocked, said shelving is firmly attached to said side walls at all four corners thereof, thereby providing a rigid three-dimensional structure, without the use of additional fastenings.

4,226,191

REMOTELY CONTROLLED ROLLER PLATFORM FOR USE IN A VISUAL AID SYSTEM

Guillermo A. Espana, Hialeah, Fla., assignor to University of Miami, Coral Gables, Fla.

Filed Feb. 26, 1979, Ser. No. 14,592
Int. Cl.[2] A47B *85/00*
U.S. Cl. 108—20 **5 Claims**

1. A platform, for supporting various types of reading materials, for use in a visual aid system including a conventional type of camera for transmitting enlarged images of said printed material to a TV monitor, comprising,

a tri-level platform including a generally rectangular flat plate base, intermediate and top portions including a top surface to support the reading material relative to the camera;

first and second trolley means to respectively connect said intermediate portion to said base portion for reciprocating, longitudinal movement relative thereto, and said top portion to said intermediate portion for longitudinal movement therewith and reciprocating transverse movement relative thereto, said first trolley means comprising a pair of channel members, fixed respectively along front and rear longitudinal top edge portions of said base portion, and a pair of trolley rollers in a predetermined spaced apart relation engaged in each of said channels and suspended from confronting longitudinal bottom edge portions of said intermediate portion; said second trolley means comprising a second pair of channel members, fixed respectively along a pair of opposed transverse top edge portions of said intermediate portion, and a second pair of trolley rollers in a predetermined spaced apart relation, engaged in each of said transverse edge channels, suspended from respective confronting transverse edge portions of said top portion;

a first reversibly electric gear motor, mounted to said base portion and including a pinion gear in driving engagement with a first gear rack, extending longitudinally along an underside of said intermediate portion to transmit relative longitudinal movement to said intermediate portion;

a second reversible electric gear motor mounted to said base portion, and including a pinion gear in driving engagement with a second gear rack extending transversely along an underside of said top portion to transmit relative transverse movement to said top portion, said second gear rack being of a longitudinal width so as to accomodate said longitudinal movement of said intermediate portion;

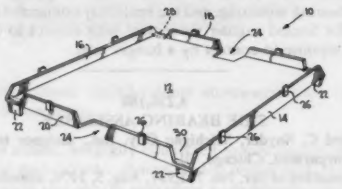
remote control means operably connected to said first and second gear motors.

4,226,192

PALLET FOR TRANSPORTING AND DISPLAYING MERCHANDISE

Douglas R. Myers, 5348 Norbeck Rd., Rockville, Md. 20853

Filed Jan. 5, 1979, Ser. No. 1,385
Int. Cl.[3] B65D *19/18*
U.S. Cl. 108—53.1 **6 Claims**



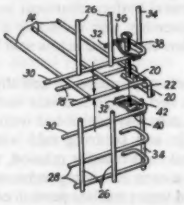
1. A pallet for receiving and stacking products for storage, shipping, and advertising, said pallet comprising a generally rectangular base, product retaining sides along all edges of said base and extending upwardly therefrom and including first and second retaining sides, feet extending downwardly from about one-half inch to one and one-half inches from said base for supporting said base upon a supporting surface for receiving therebeneath a lifting element, said feet being elongated along two remote sides of said base and arranged in two pairs, the feet of each pair being elongated parallel to said first retaining side and lying in a common general plane, and said first retaining side being terminated at opposite ends thereof in spaced relation adjacent said second retaining sides to provide clearances for said feet, with said feet being spaced inwardly from one adjacent edge of said base a distance at least equal to the thickness of an adjacent one of said retaining sides and said base having a recess located adjacent each end of said first retaining sides to receive a foot of a like pallet stacked thereon, said rectangular base having a length on at least two opposite edges thereof between said feet sufficient to receive a handtruck, and said feet extend below said base a distance greater than the height of said retaining sides.

4,226,193

SHELF ASSEMBLY

Alvin Gindel, Brookville, N.Y., assignor to Alsy Manufacturing Inc., Hicksville, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,725
Int. Cl.[3] A47B *55/02*
U.S. Cl. 108—111 **25 Claims**



1. A shelving assembly having at least one horizontal wire shelf, and vertical supports, both formed of intersecting wires secured together and said shelf comprising: a pair of closely-spaced transverse connection ribs at opposite ends of each said

wire shelf; a pair of vertical supports for each said wire shelf and each support having a transverse connection rib on at least one of its ends, distal end portions of said transverse connection rib of said vertical supports being bent so as to be disposed parallel to the adjacent portion of said transverse connection ribs; pairs of clamping means having apertures adapted to secure together each of said pair of transverse connection ribs of a wire shelf to a transverse connection rib and the distal ends thereof of each said vertical support; each of said clamping means comprising first and second clamps and fastener means, said first clamps being positioned on and bridging across each said pair of transverse connection ribs of said wire shelf, the second clamps being positioned on and bridging across said transverse connection rib and said distal end portions thereof of each said vertical support, and said fastener means passing through said clamping means and urging said first and second clamps tightly together in a generally parallel relation so as to form an overall rigid and sturdy shelf structure.

4,226,194

METHOD OF IDENTIFYING A THIEF AND STOLEN ARTICLES

Donald T. Grahn, 6551 - 45th Ave. N.E., Seattle, Wash. 98115

Filed Feb. 12, 1979, Ser. No. 11,092

Int. Cl.[2] G08B *15/02*

U.S. Cl. 109—25 **13 Claims**

1. A method of chemically labeling an article with an imperceptible latent color reagent whereby said article may be subsequently distinquished from similar articles not so labeled comprising contacting at least a portion of said article with an effective amount of a material selected from the group consisting of ninhydrin and hydrindantin and mixtures thereof.

4,226,195

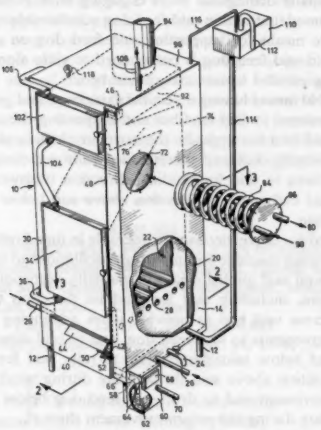
WATER HEATING STOVE

Martii K. Lindroos, Birch Hill Rd., R. 2 Sudbury, Ontario, Canada (P3E L9M)

Filed Dec. 22, 1978, Ser. No. 972,224

Int. Cl.[3] F23G *5/00*

U.S. Cl. 110—234 **8 Claims**



1. A water heating stove for supply of hot water to circulating hot water heating systems, comprising:

a fire box having a fire supporting grate therein, a fuel loading aperture in a front wall thereof and a flue outlet for exit of combustion gases therefrom;

a water jacket lining the rear and side upright walls of said fire box;

inlet and outlet means for circulating water into and out of said water jacket;

a fuel loading door adapted to close the fuel loading aperture to prevent ingress of combustion air through the said aperture;

a combustion air inlet in the fire box and disposed at a level below the fuel loading door, said combustion air inlet being equipped with damper means adapted to adjust air flow therethrough, said damper controlled air inlet comprising the sole substantial inlet for combustion air to the fire box when the fuel loading door is closed;

a bottom wall of said fire box, below the fire supporting grate, shaped to provide a lowermost zone for collection therein of liquid residues and condensates from the fire box;

an outlet conduit having an inner end communicating with said lowermost zone inside the fire box and an outer end disposed exterially of the fire box and at a level below that of the inner end;

a water trap into which the outer end of said outlet conduit protrudes, said outer end being disposed below the water level in said water trap, substantially to prevent acess of air to the fire box through said outlet conduit.

4,226,196

TUFTING MACHINES

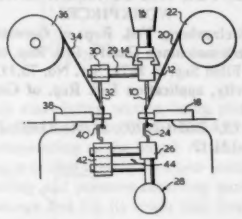
David Booth, Brighouse, England, assignor to Firth Carpets Limited, Brighouse, England

Filed Apr. 6, 1979, Ser. No. 27,720

Claims priority, application United Kingdom, Apr. 14, 1978, 14698/78

Int. Cl.[2] D05C *15/00*

U.S. Cl. 112—79 R **9 Claims**



1. A sliding needle bar tufting machine characterized by a pair of needle bars, a single row of needles carried by each needle bar, a pair of looper bars, a single row of loopers carried by each looper bar for co-operating with a respective one of said rows of needles, and means mounting said needle bars and said looper bars for adjustment of said bars in a warpwise direction thereby to permit corresponding warpwise adjustment of the spacing respectively between the two rows of needles and the two rows of loopers.

4,226,197

SEWING MACHINE WITH EDGE GUIDE

Konrad Pollmeier, Bielefeld, and Wilhelm Thesing, Halbach, both of Fed. Rep. of Germany, assignors to Dürkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed Mar. 9, 1978, Ser. No. 884,807

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1977, 2710418

Int. Cl.[2] D05B *19/00, 35/10*

U.S. Cl. 112—121.11 **8 Claims**

1. A sewing machine for the edge-parallel stitching of a workpiece having a pair of angularly adjoining edges, said sewing machine comprising:

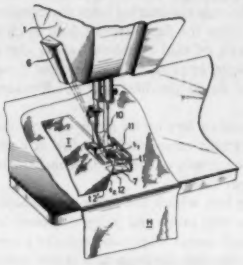
a sewing machine head having a needle adapted to stitch a seam in said workpiece along each of said edges upon

displacement of said workpiece past said needle at a stitching location;

an edge guide engageable with the edges of said workpiece for guiding same past said location;

reflection sensor means on said sewing machine head trained at a location ahead of said stitching location;

control means responsive to said sensor means for stopping



said needle in said workpiece upon a completion of a seam along a first edge of said workpiece, thereby facilitating the turning of said workpiece to align a second edge with said edge guide; and

a lug having a reflective upper surface extending transversely from said edge guide ahead of said needle and covered by said workpiece until exposed to activate said sensor.

4,226,198

DEVICE FOR THE CONTOUR SEWING OF WORKPIECES

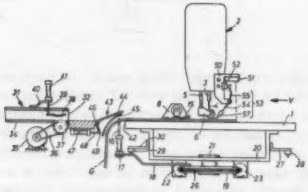
Kurt Petry, Stelzenberg, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Sep. 6, 1979, Ser. No. 73,111

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1978, 2842993

Int. Cl.[2] **D05B** *21/00, 23/00, 33/00, 27/00*

U.S. Cl. 112—121.12 **6 Claims**



1. A device for use with a motor driven sewing machine having a reciprocating needle which in moving from an upper to a down position penetrates a workpiece which is fed over a support past and in contact with a guide edge disposed alongside the neelde to form a plurality of different seam lengths at diverse angles to each other, comprising a stacking device adjacent the support having means for feeding the workpieces into a stack, turning means associated with said sewing machine and disposed alongside said support including a member movable through a path to engage the workpiece and turn it about the axis of the needle when the needle is in a down position engaged in the workpiece so as to position the workpiece in respect to the guide edge for sewing of the next seam length, and a rail switch disposed between said stacking device and said turning means and said support having a first switch position defining a path over which the material is fed to said stacking device and a second switch position defining a path over which said material is delivered to said turning means and means connected to said rail switch and said end of sewing machine for changing the rail switch position.

4,226,199

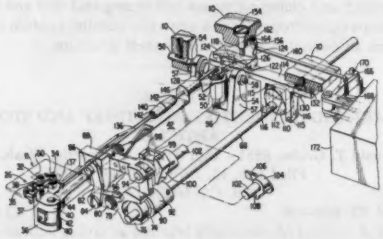
SEWING MACHINE SIX MOTION WORK FEEDING MECHANISM

Kenneth D. Adams, Madison, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Dec. 6, 1979, Ser. No. 100,762

Int. Cl.[3] **D05B** *27/00*

U.S. Cl. 112—308 **6 Claims**



1. A work feeding mechanism for a sewing machine having a work supporting bed with an axis along its length, a throat plate having a set of mutually orthogonal feed dog accommodating slots defining mutually perpendicular directions of work feeding along the surface of said bed, said directions comprising a longitudinal direction of feeding extending in a direction transverse to the axis along the length of said bed, and a lateral direction of fabric feeding perpendicular to said longitudinal direction, an elongated feed bar carried beneath said bed and extending substantially along the length of said work supporting bed, a feed dog bracket pivotally supported at one extremity of said feed bar including a feed dog having a set of mutually orthogonal work engaging teeth positioned to be accommodated within said feed dog accommodating slots and slidable means for supporting said feed dog on said bracket wherein said feed dog is constrained to slide along a line extending parallel to said axis of said bed,

gimbal means having a vertical axis pivot, said gimbal means fastened to said feed bar and supporting the extremity of said feed bar opposite the extremity having said feed dog pivotally fastened thereto to permit said feed dog to be driven in said longitudinal direction transversely across said bed and in a direction above and below said throat plate,

a feed bar drive mechanism operable in timed relation to said sewing machine for imparting oscillations to said feed bar about said gimbal means in mutually perpendicular directions, including said longitudinal direction transversely across said bed to provide work advancing and return movements to said feed dog, and in said direction above and below said throat plate to raise said feed dog to a position above said throat plate during work advancing movement and to drop said feed dog below said throat plate during the return movement thereof,

means driven by said feed bar drive mechanism for imparting oscillatory motion to said feed dog along said line constrained by said slidable means and extending parallel to said axis of said bed, and

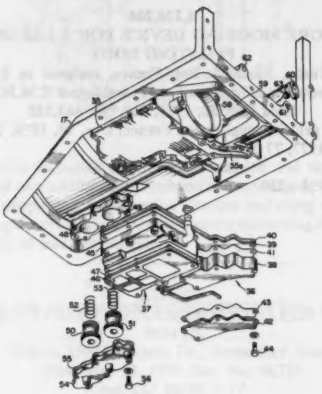
adjustable control means responsive to electrical signals for varying the amplitude and direction of oscillatory motion imparted to said slidable means by said oscillatory drive means.

4,226,200

AUTOMATIC TRANSMISSION CASING

Kunio Morisawa, and Tatsuo Kyushima, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 5, 1978, Ser. No. 912,838
Claims priority, application Japan, Jan. 30, 1978, 53/9093
Int. Cl.[2] F16H *37/08, 57/02*
U.S. Cl. 74—606 R 9 Claims



1. An automatic transmission, comprising:

(a) a casing with an integral grooved portion comprising a plurality of oil passage circuits;

(b) a changeover gear mechanism, supported within the casing and including a plurality of oil pressure operated servo mechanisms, which provides various speed stages in accordance with variation of supply of oil pressure to the servo mechanisms;

(c) a first valve body member directly engaged with a first part of the grooved portion and which incorporates a manually controlled shift valve which when operated varies supply of oil pressure to the servo mechanisms and changes over the speed stages manually; and

(d) a second valve body member directly engaged with a second part of the grooved portion and which incorporates a plurality of hydraulically operated control valves which shift in accordance with supply of oil pressure, and which by shifting varies supply of oil pressure to the servo mechanisms and change over said speed stages automatically.

4,226,201

EQUIPMENT FOR FORMING CAN BODIES

Yuzo Takahashi; Yoshinari Maeda; Yasuyuki Tanaka; Kastumi Nagai, and Shiro Oyama, all of Iwatsuki, Japan, assignors to Hokkai Can Co., Ltd., Tokyo, Japan

Filed Feb. 23, 1979, Ser. No. 14,619
Claims priority, application Japan, Mar. 14, 1978, 53-29435
Int. Cl.[2] B21D *51/26*
U.S. Cl. 113—12 3 Claims

1. A can body forming equipment comprising:

a continuous length of can forming cylinder;

a forming section provided at the starting end of said cylinder;

said forming section being provided with a can body blank feeding mechanism which feeds said blank into a position around the outer periphery of said cylinder to form the same into a roughly cylindrical body with opposite ends of said blank positioned proximate each other at a lower part of said cylinder,

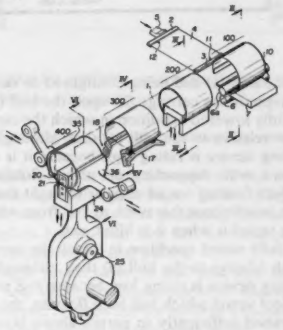
a bending section provided somewhat spaced apart from said forming section;

said bending section being provided with a stationary die internally of said cylinder at a lower part thereof and with a movable die externally of said cylinder and directly below said stationary die, the lower end face of said stationary die and the upper end face of said movable die being tapered inwardly of said cylinder to such an extent that said opposite ends of said roughly cylindrical body are slightly bent inwardly;

a heating section provided somewhat spaced apart from the preceding bending section;

said heating section being provided with high-frequency induction heating coils at positions corresponding to said opposite ends of said roughly cylindrical body, those portions of said coils corresponding to the corner portions of said opposite ends being spaced apart from said ends by a larger gap than that corresponding to the center portions of said ends;

a can body completing section provided at the ending end of said cylinder;



said can body completing section being provided with a spline cut in the underside of said cylinder and having a length corresponding to the length of the can body, said spline being provided therein via a heat-insulating material with a cooling and pressure-receiving part which has a coolant passage and has its lower end face exposed outside,

a vertically movable hammer being provided directly beneath said lower end face of said pressure-receiving part, said hammer having a recess in which a striking part having a coolant passage is provided via a heat-insulating material;

said cylinder having an outwardly extending mechanism on both lateral sides thereof in said completing section, and pushing members being provided on the opposite sides of said cylinder externally thereof;

feeding pawl members for advancing said roughly cylindrical body to the respective succeeding steps being provided freely projectably at each advanced end of said forming section, bending section, heating section and can body forming section of said cylinder.

4,226,202

FLOATING LASH BARGE LIFTING DEVICE

Edward G. Conrad, P.O. Box 133, Marrero, La. 70073

Filed Nov. 23, 1977, Ser. No. 854,493
Int. Cl.[2] B63C *1/02*
U.S. Cl. 114—48 19 Claims

1. A floating lifting device for a floating LASH barge, which as a hull with sides and a bottom,

said device comprising:

(a) a hull including:

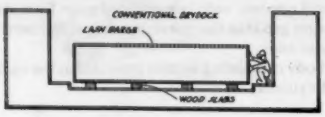
(i) a pair of longitudinally extending, laterally spaced buoyant hull members,

(ii) cross-beam means rigidly interconnecting the two buoyant hull members below where the cross-beams would interfere with ingress to and egress by the floating vessel from where the floating vessel is when it is lifted;

(b) a carriage configured to support the floating LASH barge from the bottom thereof being provided on the hull of said floating lifting device;

(c) a set of four upstanding posts mounted on the carriage (a) in a rectangular array which is congruent with the array of stacking post sockets conventionally provided on the hull bottoms of LASH barges;

(d) an elevating means interposed between the carriage (b)



and the hull (a) and being configured to raise and lower, and support the carriage (b) upon the hull (a), between

(i) a fully lowered condition in which the carriage (b) is so low relative to the hull (a) that, although the floating lifting device is riding high because it is not weighted down with supporting an object floating vessel, an object floating vessel may be brought thereover without interference therewith to and from where the floating vessel is when it is lifted, and

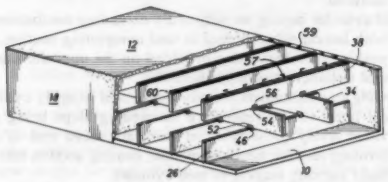
(ii) a fully raised condition in which the carriage (b) is so high relative to the hull (a) that, although the floating lifting device is riding low because it is supporting the object vessel which had been floating, the object vessel is raised sufficiently to permit above board access for repair to such portion of said object vessel as may be in need thereof.

4,226,203

FLOATABLE CONCRETE PALLET FOR LIFTING AND BEARING HEAVY LOADS

Benjamin G. Marcin, Houston, Tex., assignor to Pullman Incorporated, Chicago, Ill.

Filed Sep. 25, 1978, Ser. No. 945,269
Int. Cl.³ B63B *5/14*
U.S. Cl. 114—65 A **8 Claims**



1. The method of making a floatable pallet for lifting heavy loads, which comprises

precasting in prestressed concrete a plurality of substantially identical elongated elements for each layer of the superstructure of the pallet, said elements having cast therein connectors for joining the elements to adjacent structures,

casting and joining a concrete bottom slab to a row of parallel aligned and edgewise elements comprising the bottom layer,

stacking and joining subsequent rows of parallel aligned and edgewise elements in layers starting with a layer on top of said bottom layer, the elements of each successive layer being transverse with the elements therebeneath,

casting and joining concrete vertical bulkheads to the ends of said elements and to said bottom slab, and

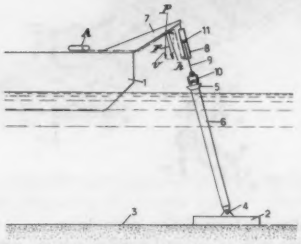
casting and joining a concrete top slab to the top edges of the elements in the top layer of elements and to the top edges of said vertical bulkheads.

4,226,204

OFF-SHORE MOORING DEVICE FOR A LARGE-SIZED FLOATING BODY

Samuel Tuson, Mesnil-le-Roi, France, assignor to Entreprise d'Equipements Mecaniques et Hydrauliques E.M.H., France

Filed Dec. 22, 1977, Ser. No. 863,325
Claims priority, application France, Dec. 24, 1976, 76 39081; Dec. 14, 1977, 77 37690
Int. Cl.² B63B *21/00*
U.S. Cl. 114—230 **5 Claims**



1. An off-shore mooring device for a large-size floating body with an anchoring system for anchoring the floating body to the sea bed, comprising: a mooring head located above sea level and rotatably mounted at the upper end of a column-like structure, the latter being connected at its other end to said anchoring system by means of a universal joint; a rigid arm fixedly secured to said floating body to overhang in an outboard fashion therefrom; and a pulling force generator providing a vertical force component adapted to act substantially upwardly upon said mooring head and which is impressed on said floating body, said force generator comprising at least one hydraulically operated piston-and-cylinder linear actuator with a selectively adjustable fluid feed pressure, wherein said actuator is pivotally coupled to the free end of said rigid arm and adapted to be removably connected to said mooring head so as to draw said free end towards said head or withdraw it therefrom.

4,226,205

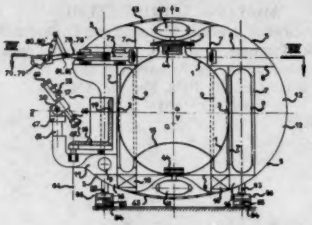
AUXILIARY SUBMERSIBLE FOR DEEP-SEA WORK

Paul Bastide, 108 rue de Rennes, Paris, France

Filed Feb. 15, 1978, Ser. No. 877,846
Claims priority, application France, Feb. 17, 1977, 77 04473
Int. Cl.² B63G *8/08*
U.S. Cl. 114—337 **13 Claims**

8. A submersible comprising a thick hull which consists, firstly of a main body formed from two hemispherical elements interconnected by a circular-base cylinder having a longitudinal axis, and secondly a system of four identical strong cylinders disposed so as to be capable of being used as trim or list correction tanks and as submersible compensation tanks, a lightweight body, which particularly contains driving ballasts, completely surrounding the main body of the thick hull and having an external shape which is rounded throughout and completely smooth, the only discontinuity in the outline being, firstly in the extreme forward part of the submersible and, secondly, on the longitudinal side walls, and finally on the top

and bottom walls, in the form of a plurality of recesses which are open to the exterior as widely as possible and are connected at their periphery to the outer part of the lightweight hull of the submersible by connections of very rounded shape; said



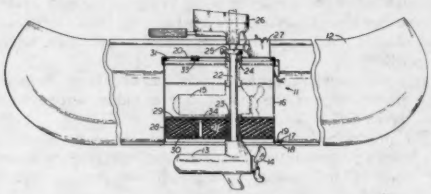
submersible including two main propulsion and steering devices and two additional propulsion and steering devices, each of said propulsion and steering devices including means for changing the orientation thereof thereby enhancing the maneuverability of said submersible.

4,226,206

RETRACTABLE PROPULSIVE MEANS FOR SMALL BOATS

John E. Wilson, 1501 Parklane Dr., Bettendorf, Iowa 52722

Filed May 21, 1979, Ser. No. 40,716
Int. Cl.³ B63H *5/12*
U.S. Cl. 440—112 **2 Claims**



1. A mounting for attaching a propelling assembly to a boat, said propelling assembly being the type having an outwardly extending shaft and a control handle attached to the outer end of said shaft, said mounting comprising:

a box having a closed wall to be positioned vertically within said boat, a lower edge of said wall adapted to be sealed to the bottom of said boat about an opening through said bottom,

a horizontal cover for said box detachably connected to said wall,

a horizontal supporting member movable like a piston within said wall, said supporting member having a resilient peripherial portion functioning as a tight seal between said supporting member and said wall,

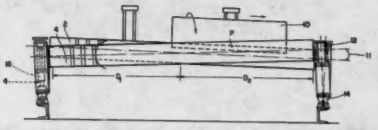
first and second resilient grommets in a vertical line through said supporting member and through said cover respectively, said shaft extending from said propelling assembly upwardly through said first and second grommets to position said propelling assembly directly below said supporting member, said shaft movable manually in a vertical direction within said second grommet for moving said supporting member and said propelling assembly in unison between a lower position and an upper position, said first grommet fitting tightly enough about said shaft to cause said supporting member to move vertically within said closed wall while remaining at a fixed vertical distance with respect to said propelling assembly, said propelling assembly while in said upper position being positioned within said box and while in said lower position being positioned below said bottom of said boat, said supporting member while in said lower position being within a lower position of said wall to function as the bottom of said boat, and said shaft being rotatable by use of said control handle to steer said boat.

4,226,207

APPARATUS FOR APPLYING PROTECTIVE COATINGS TO GRAPHITE BODIES

Ivan V. Genev; Mihail Konstantinov; Alexander Valchev, and Vassil Peev, all of Sofia, Bulgaria, assignors to DSO "Cherna Metalurgia", Sofia, Bulgaria

Continuation-in-part of Ser. No. 760,504, Jan. 19, 1977, abandoned. This application Jul. 6, 1978, Ser. No. 922,491
Int. Cl.² B05C *5/00*
U.S. Cl. 118—620 **11 Claims**



1. An apparatus for applying protective coatings to cylindrical graphite bodies, comprising:

a base;

a first shaft rotatable about a first axis and mounted on said base;

a second shaft rotatable about a second axis and mounted on said base in a closely spaced-apart relationship with said first shaft and forming a first guideway therebetween for said graphite bodies, said first axis and said second axis lying in respective parallel planes;

variable-length means between said base and an end of at least one of said shafts for displacement of said axis thereof within said respective plane thereof to form a variable angle of less than 30° with said axis of said other shaft;

reversible driving means on at least one of said shafts for the reversible rotation thereof and the reciprocal displacement thereby along said guideway of said bodies;

a battery of coating tools adjacent said guideway intermediate the ends of said shafts for applying said coating to said bodies;

a pair of electrodes respectively positioned above said guideway to either side of said battery of coating tools at locations fixed along said axes;

slip rings formed on at least one of said shafts; and

an electric-arc current supply connected to said electrodes and said slip rings for leading current to the electrodes.

4,226,208

VAPOR DEPOSITION APPARATUS

Keijiro Nishida, Nimomiya; Mitsuo Kakei, Tokyo; Osamu Kamiya, and Nobuyuki Sekimura, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 1978, Ser. No. 928,435
Claims priority, application Japan, Aug. 4, 1977, 52-93798; Jun. 1, 1978, 53-66160
Int. Cl.² C23C *13/08*
U.S. Cl. 118—706 **15 Claims**

1. A vacuum processing apparatus comprising:

(a) a housing forming a main vacuum container;

(b) a driving shaft;

(c) vacuum chamber forming means for forming a plurality of independent vacuum chambers located within said main vacuum container, said vacuum chamber forming means comprising:

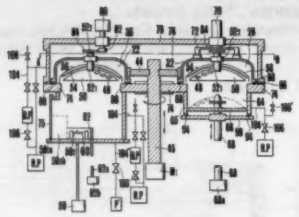
(i) cover means located within said housing and being rotatively mounted on and controlled by said driving shaft for forming said independent vacuum chambers,

said cover means at least being covered by a vacuum within said main vacuum container, and

(ii) sealing means for keeping said independent vacuum chambers air tight;

(d) hanger means for supporting articles to be processed within each of said independent vacuum chambers;

(e) means forming an entrance-and-exit chamber having an inlet-and-outlet opening through which the articles to be processed are moved in and out of said housing, said



entrance-and-exit chamber being one of said independent vacuum chambers;

(f) inhaling-and evacuating means for evacuating said main vacuum container and the plurality of independent vacuum chambers for maintaining them at a predetermined pressure level; and

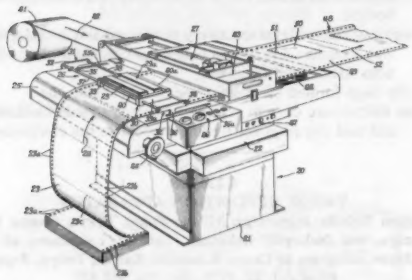
(g) evaporant means for causing at least one evaporant material disposed in certain of said independent chambers to evaporate for effecting vacuum plating on the articles to be processed.

4,226,209

APPLICATOR FOR LIQUID ADHESIVE TO A PAPER FORM FOR SECURING A STENCIL THERETO

Grant F. Kenworthy, Des Plaines, Ill., assignor to Weber Marking Systems, Inc., Arlington Heights, Ill.

Filed Dec. 5, 1977, Ser. No. 857,686
Int. Cl.³ B05C *1/16*
U.S. Cl. 118—708 **7 Claims**



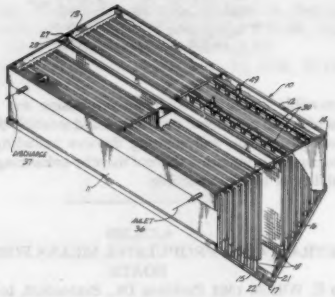
1. An applicator for applying a liquid adhesive in a desired pattern and quantity to a paper form for receiving and holding a stencil thereto, comprising a storage chamber for a liquid adhesive, an applicator chamber located adjacent said liquid adhesive storage chamber, means delivering a measured quantity of liquid adhesive from the storage chamber to the applicator chamber, said applicator chamber having an opening adjacent a paper form, means in said opening controlling the passage of liquid adhesive from said applicator chamber to said paper form, said means in said opening comprising a flexible porous open celled polyurethane plastic material, the plastic material being condensed and permanently pre-compressed to different degrees of porosity in selected areas thereof to itself control the passage or non-passage of liquid adhesive through said selected areas.

4,226,210

ABALONE MARICULTURE

George S. Lockwood, Carmel Valley; Fred T. Shultz, Sonoma, and Gerrit Bevelander, Carmel, all of Calif., assignors to Monterey Abalone Farms, Monterey, Calif.

Filed Oct. 30, 1978, Ser. No. 955,944
Int. Cl.³ A01K *61/00*
U.S. Cl. 119—4 **74 Claims**



1. The process of culturing gastropod molluscs and other benthic motile marine and aquatic animals from the larval stage through infancy in a body of water in a growing tank having therein settlement surfaces upon which the larvae settle and the animals resulting from larvae metamorphosis live, which comprises:

(a) conditioning the settlement surfaces to develop thereon a microbiological community so as to induce settlement of larvae and to support life thereon;

(b) introducing larvae of the animal into the tank whereby at least a portion of the larvae will settle upon the settlement surfaces and undergo metamorphosis and subsequent growth;

(c) circulating water in the tank at least periodically; and

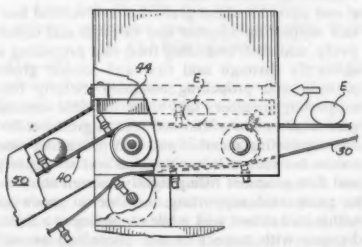
(d) controlling the biological and chemical balance in the tank to provide food and to limit the build-up of harmful components and conditions in the tank.

4,226,211

EGG COLLECTOR

Earl Barrentine, Bogart, Ga., assignor to Chore-Time Equipment, Inc., Milford, Ind.

Filed Mar. 10, 1978, Ser. No. 885,122
Int. Cl.² A01K *31/16*
U.S. Cl. 119—48 **23 Claims**



1. Apparatus for collecting eggs from a number of poultry cages, the cages including means for urging any eggs laid in the

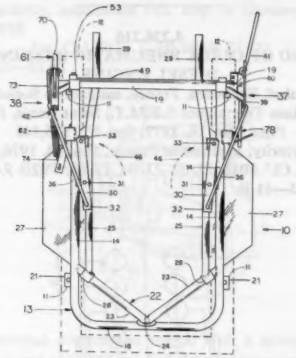
cage to a cage collecting location, the apparatus including first collector conveyor means for receiving the eggs at each cage egg collecting point, and having a tail end, ramp conveyor means for receiving the eggs from the first collector conveyor means, and having a head end, the collector conveyor means tail end and the ramp conveyor means head end being located in adjacent, parallel, co-planar positions, deflector means for urging the eggs from the collector conveyor to the ramp conveyor means, finger means including a short finger and a long finger mounted side-by-side in a row upon said ramp collector means to permit easy egg acquisition and safe egg retention on the ramp conveyor means out of contact with any other egg during ramp conveyor means operation, drive means for driving the collector conveyor and the ramp conveyor means, the ramp conveyor means being driven substantially twice as fast as the collector conveyor, and accumulator conveyor means for receiving the eggs from the ramp conveyor means and for conveying the eggs to an accumulation point.

4,226,212

ANIMAL HOLDING GATE WITH AUTOMATIC CLOSING OPERATION

Marvin J. Priefert, Mt. Pleasant, Tex., assignor to Priefert Mfg. Co., Mt. Pleasant, Tex.

Filed May 11, 1979, Ser. No. 38,090
Int. Cl.³ A61D *3/00*
U.S. Cl. 119—98 **6 Claims**



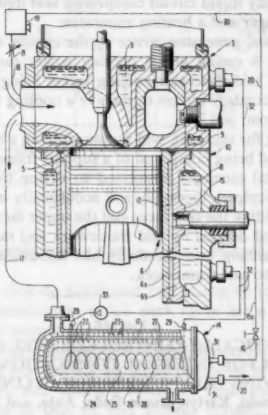
1. An animal holding gate comprising:
(a) an upright main frame having a pair of transversely spaced side members and bottom and top cross members,
(b) an upright animal engaging member for each of said side members having a lower portion guidably connected to said bottom cross member for movement laterally of said main frame,
(c) a lever corresponding to each of said animal engaging members pivotally supported intermediate the ends thereof on an adjacent side member having a first end portion and a second end portion pivotally connected with an associated animal engaging member,
(d) a transverse rock shaft rotatably mounted on said main frame adjacent the upper ends of said side members in a horizontally parallel spaced relation with said top cross member to form therewith a guideway for guidably supporting the upper ends of said animal engaging members for movement laterally of the gate,
(e) a pair of rock arms on said rock shaft each of which is movably connected with the first end portion of an associated lever whereby said animal engaging members are moved laterally toward or away from each other into or out of animal engaging position in response to a rotational movement of said rock shaft,
(f) catch means mounted on said rock shaft for rotation therewith,
(g) latch means movably mounted on said main frame for movement into an engagement with said catch means to hold said rock shaft in a selected rotated position when said animal engaging members are out of an animal engaging position, said latch means mounted adjacent the upper portion of at least one of said animal engaging members, whereby said latch means and said catch means are disengaged upon movement of said one animal member through contact with an animal, and
(h) yieldable pressure means acting on said rock shaft to urge said shaft out of said selected rotated position, whereby on disengagement of said catch and latch means said animal engaging members are automatically moved into an animal engaging position.

4,226,213

INTERNAL COMBUSTION ENGINE

Otto Bernauer, Weinstadt, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 24, 1978, Ser. No. 954,125
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750463
Int. Cl.³ F02B *43/00*; F02M *31/00*
U.S. Cl. 123—1 A **8 Claims**



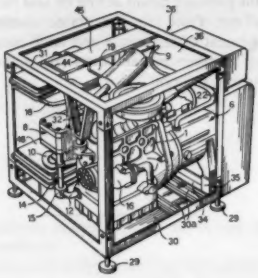
1. An internal combustion engine having cylinder wall means adapted to be cooled and delimiting at least one working space means of an internal combustion engine, characterized in that a hydrogen-impervious enclosed metal hydride storage means having an enclosure means is provided in direct heat-conducting contact within the cylinder wall means forming a pre-heat storage means, and in that an interior of the enclosure means of the metal hydride storage means is operable to be selectively connected with at least one of a hydrogen source and a separate further hydrogen storage means.

4,226,214

APPARATUS FOR THE COMBINED PRODUCTION OF ELECTRICAL ENERGY AND HEAT

Mario Palazzetti, Avigliana, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Jul. 10, 1978, Ser. No. 923,272
Claims priority, application Italy, Jul. 29, 1977, 53376B/77
The portion of the term of this patent subsequent to Aug. 14, 1996, has been disclaimed.
Int. Cl.[3] F02B *63/04*; F02F *7/00*; H02P *9/04*
U.S. Cl. 123—2 **19 Claims**



1. A self-contained modular unit for the combined production of electrical energy and heat, comprising

an internal combustion engine having a coolant jacket for the circulation of liquid coolant, and a coolant inlet and outlet communicating with said jacket;

a primary liquid coolant circuit including said engine coolant jacket, a gas/liquid heat exchanger through which the engine exhaust gases flow to give up heat to coolant flowing out of the jacket outlet and a liquid/liquid heat exchanger disposed in said primary circuit between said gas/liquid heat exchanger and the jacket inlet;

a secondary liquid circuit comprising said liquid/liquid heat exchanger and a heating apparatus;

an electrical generator driven by the engine, said generator having a casing and a cooling jacket surrounding the casing, said generator cooling jacket being connected in said secondary circuit to receive a cooling flow of liquid therefrom; and

a housing for said unit, said housing having a box-like structure and being comprised of a support framework formed by metal elements positioned to define the edges of a parallelepiped, thermally and acoustically insulating panels cladding the side faces and the upper face of the parallelepiped defined by said framework and means releaseably attaching said thermally and acoustically insulating panels to said framework.

4,226,215

ELECTRONICALLY-CONTROLLED FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE HAVING ODD NUMBERS OF CYLINDERS

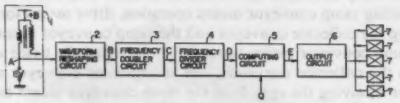
Akio Kobayashi, Kariya; Kunio Endo, Anjo, and Norio Omori, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 25, 1978, Ser. No. 927,818
Claims priority, application Japan, Jul. 28, 1977, 52-91972
Int. Cl.[3] F02B *3/00*
U.S. Cl. 123—487 **10 Claims**

1. An electronically-controlled fuel injection system for an internal combustion engine having an odd number of cylinders, in which the quantity of fuel supplied to the engine cylinders is regulated by the duration of pulses of a fuel injection pulse signal applied to solenoid-operated fuel injection valves, and two fuel injection pulses are generated in each operating cycle of the engine in synchronism with the revolution of the engine, said system comprising:

a waveform reshaping circuit adapted to be connected to an ignition unit of the engine for reshaping the waveform of an ignition signal upon receipt from said ignition unit thereby providing an output pulse signal subjected to the waveform reshaping;

a frequency doubler circuit connected to said waveform reshaping circuit for doubling the frequency of the output pulse signal of said waveform reshaping circuit thereby generating a frequency-doubled output pulse signal;



a frequency divider circuit connected to said frequency doubler circuit for dividing the frequency of the output pulse signal of said frequency doubler circuit by the number of engine cylinders thereby providing a frequency-divided output pulse signal; and

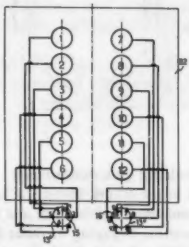
computing means connected to said frequency divider circuit for generating said two fuel injection pulses in synchronism with the output pulse signal of said frequency divider circuit.

4,226,216

METHOD OF QUICK PNEUMATIC BRAKING OF A DIESEL ENGINE

Dirk Bastenhof, Eaubonne, France, assignor to Societe d'Etudes de Machines Thermiques S.E.M.T., Saint Denis, France

Filed Aug. 16, 1977, Ser. No. 825,145
Claims priority, application France, Sep. 30, 1976, 76 29411
Int. Cl.[2] F01L *13/02, 13/04, 13/06*; F02D *9/04*
U.S. Cl. 123—41 R **10 Claims**



1. A method of improving the effectiveness of the pneumatic braking of a reversible diesel engine operating in particular on a four-stroke cycle, the engine having intake and exhaust valve means controlled by an engine-driven camshaft with forward running cams and reverse running cams, said camshaft being axially displaceable between an engine forward running position and an engine reverse running position, an even number of at least ten working cylinders arranged in particular in two V-shaped rows of a same number of working cylinders, at least some of which in each row are respectively provided with individual starting valves automatically closed by spring means after having been vented and the openings of which are pneumatically controlled sequentially by at least one central engine-driven rotary distributor, said closing being delayed in time with respect to the moment at which the order to close is delivered by shutting off the compressed air and by venting said distributor as an increasing function of the length of feed piping of each starting valve from said distributor and of the instant rotary speed of said engine, said method including

reducing through constructional design of said distributor the relative duration of admission, through said distributor, of compressed pilot air for opening said starting valves in at least one row of working cylinders with respect to the duration for the other row thereby advancing the delivery of the order to close in such a manner that each starting valve involved closes not later than about the time at which the corresponding exhaust valve opens on the associated working cylinder, wherein the improvement comprises the steps of optimizing through constructional design of said distributor at least approximately the thus shortened value of the actual relative duration or control of opening of the compressed air passage-way at the distributor for each starting valve of one row of working cylinders intended for braking purposes with a view to increasing the instantaneous decreasing value of the rotary speed of the engine from which the braking step is initiated thereby advancing the moment at which the braking begins and of optimizing the duration for each starting valve of the other row of working cylinders for performing the starting step.

4,226,217

INTERNAL COMBUSTION ENGINE WITH SOUND-INSULATING CAPSULE AND WATER RADIATOR ARRANGED OUTSIDE THE CAPSULE

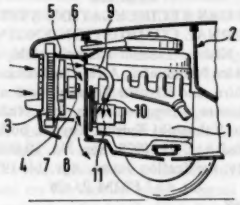
Peter Haslbeck, and Hans Kocherscheidt, both of Munich, Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 8, 1978, Ser. No. 940,731

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 2740918

Int. Cl.³ F02F *1/34;* F02B *77/00*

U.S. Cl. 123—41.62 **4 Claims**



1. An internal combustion engine with a sound-insulating enclosure means and with a radiator means arranged outside of the enclosure means and having a cooling fan and a cooling air box means, the cooling air box means having a discharge outlet outside of the enclosure means, characterized in that at least one cooling air line means in the form of a hose laid out curved and having a relatively narrow cross section is connected to the cooling air box means, leads into the enclosure means and extends within said enclosure means so that the discharge opening means of the hose is directed at least against one particular part or aggregate of the engine to be cooled.

4,226,218

CARBURETOR IDLE JET CONTROL

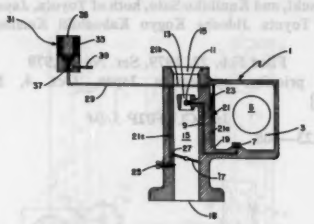
Russell L. Lutz, R.D. #1, Box 1148, Mohnton, Pa. 19540

Filed Sep. 5, 1978, Ser. No. 939,464

Int. Cl.² F02D *31/00*

U.S. Cl. 123—325 **2 Claims**

1. A method for increasing the efficiency of an automotive internal combustion engine by interrupting the flow of fuel to the idle jet of the carburetor when idle jet fuel is not required to keep the engine running, the improvement comprising an electrically operated valve to control the flow of fuel through the idle jet which is controlled by a first switch wired in series with the valve and a second and a third switch wired in a series with each other and the valve but in parallel to the first switch; the opening and closing of the first switch being controlled by the throttle, the second switch being controlled by the speed of



the engine, and the third switch controlled by the vacuum within the intake manifold of the engine.

4,226,219

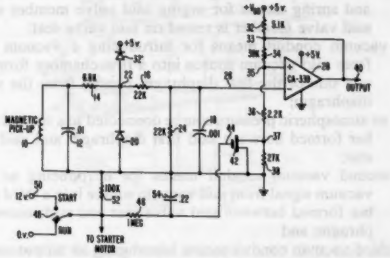
ENGINE TIMING CIRCUIT WITH NOISE IMMUNITY

John A. Olmstead, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 30, 1978, Ser. No. 955,626

Int. Cl.³ F02P *9/00*

U.S. Cl. 123—424 **4 Claims**



1. In an electric timing system for an internal combustion engine,

a magnetic pick-up positioned on the engine to produce a signal waveform in which each cycle has a gradual up slope and steep down slope,

a Schmitt trigger including a voltage divider, and including a comparator having an input receptive to said signal waveform, and having a reference input and an output connected to taps on said voltage divider, so that the Schmitt trigger produces an output pulse having a leading edge when the input signal on the up slope reaches an upper trip point and having a trailing edge when the input signal on the down slope reaches a lower trip point,

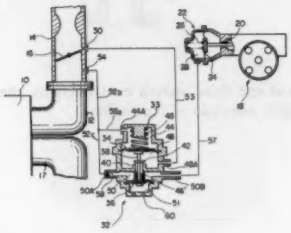
a transistor having output electrodes defining a conduction path connected across a portion of said voltage divider, and

means operative at low engine cranking speeds when the signal waveform cycles have a lower peak amplitude to render said transistor conductive and thereby reduce the upper trip point of said Schmitt trigger.

4,226,220
IGNITION TIMING CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Yukio Suzuki, and Kunihiko Sato, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 22, 1979, Ser. No. 13,978
Claims priority, application Japan, Oct. 4, 1978, 53-135419[U]
Int. Cl.³ F02P 5/04
U.S. Cl. 123—408 **8 Claims**



1. An ignition timing control system for an internal combustion engine, said engine having an intake device provided with a throttle valve, said system comprising:

a distributor;

vacuum actuator means for operating said distributor;

a vacuum source formed in said intake device at a position located downstream of said throttle valve in its idle condition;

valve means having a casing, a pair of diaphragms arranged across the interior of said casing, a valve member connected to both said diaphragms, a valve seat arranged between said diaphragms so as to face said valve member, and spring means for urging said valve member so that said valve member is rested on said valve seat;

vacuum conduit means for introducing a vacuum signal from said vacuum source into a first chamber formed on one side of the first diaphragm remote from the second diaphragm;

an atmospheric pressure source connected to a second chamber formed between said first diaphragm and said valve seat;

second vacuum conduit means for introducing an input vacuum signal from said vacuum source into a third chamber formed between said valve seat and said second diaphragm; and

third vacuum conduit means introducing an output vacuum signal from said third chamber into said vacuum actuator means,

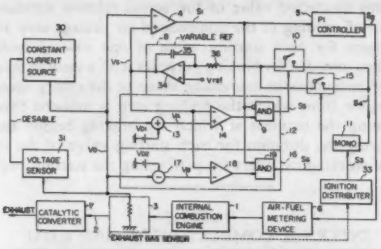
said second diaphragm forming, on one side remote from said first diaphragm, a fourth chamber which is always opened to the atmosphere, whereby the level of the vacuum in said third chamber is controlled by air introduced into said third chamber from said second chamber in response to the vacuum level in said first chamber and said third chamber.

4,226,221
CLOSED LOOP MIXTURE CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Masaharu Asano, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 10, 1979, Ser. No. 28,865
Claims priority, application Japan, Jun. 13, 1978, 53-70311
Int. Cl.² F02B 3/00; F02M 7/00
U.S. Cl. 123—440 **7 Claims**

1. A closed loop mixture control system for an internal combustion engine having an exhaust gas sensor for generating a signal representing the concentration of a predetermined constituent of the emissions of the engine, said exhaust gas sensor having an internal impedance which varies inversely as a function of temperature, and means for generating a signal representing the deviation of said concentration representative signal from a reference voltage to correct the air-fuel ratio of the mixture supplied to said engine, said deviation representative signal having a first voltage level corresponding to a lean mixture condition and a second voltage level corresponding to a rich mixture condition, comprising:



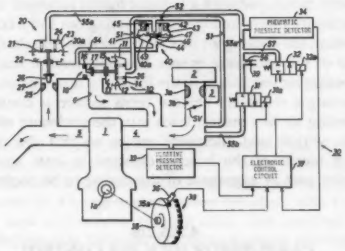
means for injecting a current into said exhaust gas sensor to raise the voltage level of said concentration representative signal, whereby said voltage level decreases from a high to a low level as a function of temperature; and

means for controlling said reference voltage to lie between the maximum and minimum peak values of said concentration representative signal.

4,226,222
EXHAUST GAS RECIRCULATION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Tokio Kohama, Nishio; Takeshi Matsui, Aichi; Hisasi Kawai, Toyohashi; Akira Nishimatsu, Aichi; Toshikazu Ina, Okazaki; Hidetaka Nohira, and Kiyoshi Kobashi, both of Mishima, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Apr. 11, 1979, Ser. No. 30,606
Claims priority, application Japan, Apr. 14, 1978, 53-44445
Int. Cl.³ F02M 25/06
U.S. Cl. 123—568 **6 Claims**



1. In an exhaust gas recirculation system for an internal combustion engine having an induction pipe for conducting air-fuel mixture into a combustion chamber of said engine and an exhaust pipe for discharging exhaust gases from the combustion chamber therethrough, said system comprising:

a recirculation pipe leading said exhaust pipe to said induction pipe to recirculate exhaust gases into the combustion chamber of said engine therethrough;

first flow control means for controlling the flow quantity of exhaust gases through said recirculation pipe in accordance with changes of negative pressure applied thereto

from said induction pipe in relation to exhaust pressure value appearing in said recirculation pipe at the upstream of said first flow control means; and

second flow control means for controlling the flow quantity of exhaust gases through said recirculation pipe in accordance with pneumatic pressure applied thereto, said second flow control means including first and second electrically operated valves to be selectively energized to apply the negative pressure and the atmospheric pressure respectively from said induction pipe and the exterior to said second flow control means to control the said pneumatic pressure;

an electric control apparatus for said system comprising:

a first detector for detecting rotational speed of said engine to produce a first electric signal indicative of the rotational speed of said engine;

a second detector for detecting negative pressure in said induction pipe to produce a second electric signal indicative of the negative pressure;

a third detector for detecting pneumatic pressure to said second flow control means to produce a third electric signal indicative of the pneumatic pressure;

a speed signal generator for producing an electric binary signal indicative of the rotational speed of said engine in response to the first electric signal;

an analog-to-digital converter for converting the second electric signal into an electric binary signal indicative of the negative pressure;

a digital computer for repetitively calculating an optimum value indicative of optimum pneumatic pressure to be applied to said second flow control means in accordance with the binary signals, said computer being programmed to calculate the optimum value from a function describing a desired relationship among an optimum value, rotational speed of said engine and negative pressure in said induction pipe;

a digital-to-analog converter for converting an electric binary signal indicative of the calculated optimum value into an electric analog signal;

a drive circuit for selectively energizing said first and second electrically operated valves in response to an output signal therefrom, said drive circuit including means for comparing a level of the third electric signal with first and second levels based on the electric analog signal to produce the output signal when the level of the third electric signal is out of a predetermined range defined by said first and second levels and to cease the output signal when the level of the third electric signal is in said predetermined range.

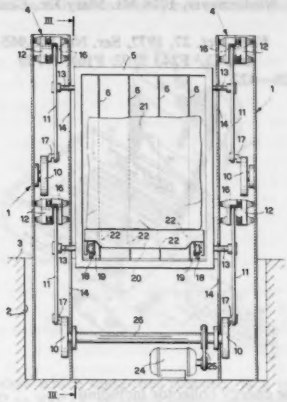
4,226,223

MACHINE FOR SAWING BLOCKS OF SOLID, ESPECIALLY STONY MATERIALS, SUCH AS MARBLE, GRANITE AND THE LIKE

Ermanno Pacini, Via R. De Grada 3, Milan, Italy

Filed Nov. 21, 1978, Ser. No. 962,658
Claims priority, application Italy, Dec. 1, 1977, 30282 A/77
Int. Cl.³ B28D *1/06*
U.S. Cl. 125—16 R **5 Claims**

1. A machine for sawing blocks of a solid material, more particularly stony materials, said machine comprising a movable frame for supporting a plurality of parallel toothed blades, and frame actuating means for moving said frame along a preselected substantialy elliptical path, said frame actuating means comprise at each side of said blade-carrying frame a pair of wheels having continuous concordant rotary motions around parallel fixed axes, a pair of remote sliders and a pair of connecting rods one end of each of said connecting rods being pivotally eccentrically attached to a respective one of said wheels and the other end of each of said connecting rods being pivotally attached to a respective one of said pair of sliders, means mounting each of said sliders for movement rectilinearly parallel to a line between said axes of the wheels, said connecting rods being of substantially the same length and having a side of said blade-carrying frame pivotally attached thereto at



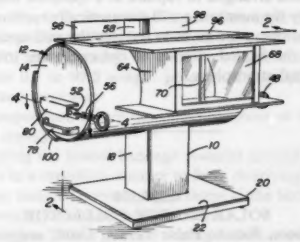
respective points substantially equally spaced from said other end of said connecting rods.

4,226,224

WOOD BURNING STOVE FOR HEATING HOMES

Orley B. Milligan, P.O. Box 279, Medford, Oreg. 97501

Filed Jun. 19, 1978, Ser. No. 916,498
Int. Cl.³ F24C *15/25*
U.S. Cl. 126—83 **27 Claims**

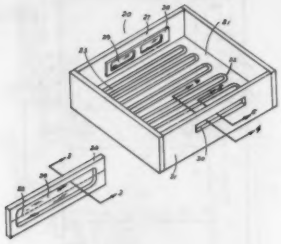


1. A stove for burning wood and other solid fuels, said stove including a horizontally elongated hollow body having opposite sides and opposite ends, defining a combustion chamber therein and including a flue gas outlet centrally intermediate the opposite ends of said body opening outwardly of an upper portion of said combustion chamber, the opposite ends of said body being provided with upstanding end wall structures each including combustion air inlet means for admitting combustion air therethrough in a generally horizontal direction into the interior of said body from the exterior thereof, support means operatively connected to said hollow body for support of said body from a suitable support structure, said body including means for admitting solid fuel to be burned thereinto, and a generally horizontal baffle plate in said combustion chamber above the level of said air inlet means, registered with and spaced below said flue gas outlet, said plate extending longitudinally of said body and including opposite side marginal portions sealed relative to said hollow body sides and opposite end marginal portions spaced inwardly of said end wall structures, a lower portion of the interior of said hollow body intermediate the opposite ends thereof and spaced below said baffle plate being adapted to receive said solid fuel for burning in said combuston chamber below said baffle plate.

4,226,225
THERMAL OVERLOAD RELEASE FOR SOLAR ENERGY COLLECTORS

William P. Niedermeyer, 1024 Mt. Mary Dr., Green Bay, Wis. 54303

Filed Oct. 27, 1977, Ser. No. 845,965
Int. Cl.[3] F24J 3/02; F16K 17/38
U.S. Cl. 126—422 5 Claims

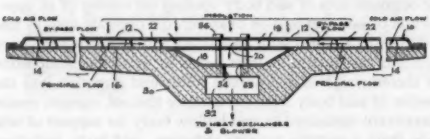


1. A solar energy collector including
a solar ray absorption member,
an enclosure for said solar ray absorption member wherein to trap solar heat,
an opening in the enclosure whereby to vent the interior of the enclosure to the internal atmosphere,
means in said opening to permit air transfer from the interior of the enclosure to the external atmosphere whereby to prevent pressure buildup within the enclosure under normal operating conditions,
said means including a closure for the said opening,
said closure comprising a thin, fusible membrane constructed arranged to rupture at a specified temperature,
whereby the membrane will automatically rupture at a specified temperature so as to unclose the said opening and to vent the heated interior of the enclosure to the cooler external atmosphere.

4,226,226
SOLAR ENERGY COLLECTOR

Stellan Knoos, Rancho Palos Verdes, Calif., assignor to AGA Aktiebolag, Lidingo, Sweden

Filed Dec. 1, 1977, Ser. No. 856,255
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—432 14 Claims

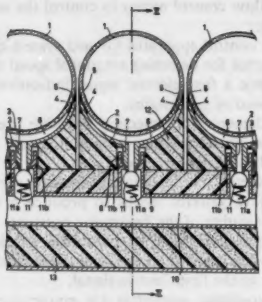


1. A compact solar radiation collector comprising:
collector panel means having a surface area of less than 1 m^2, and second panel means adjacent the collector panel means and providing a principal flow channel under the panel, said collector panel means including means providing a bypass flow with an f number (ratio of bypass flow to principal flow) in the range of 0.2 to 0.5, said collector panel means with the second panel means defining a flow path length of less than 0.5 m and a channel height of approximately 1.5 mm.

4,226,227
SOLAR COLLECTOR

Gerhard Harupa, Aachen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 19, 1978, Ser. No. 897,736
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1977, 2726457
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—442 4 Claims

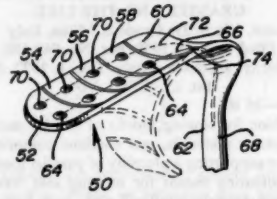


1. A solar collector constituted of one or more individual heat exchanger unit each comprising a body provided with a trough; a sealed and evacuated transparent cover tube in contact with said trough, said cover tube and said trough being of complementary shape and forming a heating duct therebetween; an absorber associated with the cover tube adjacent the heating duct and serving to transfer heat derived from incident solar radiation during operation to a heat-transport medium fed through the heating duct; means to seal the cover tube to the trough along and adjacent to their line of contact; a heat-transport medium inlet duct and a heat-transport medium outlet duct respectively positioned in the vicinity of the cover tube ends; connection tubes respectively extending from said inlet duct and said outlet duct; and corresponding connection sleeves extending from the respective ends of said heating duct for removable reception by said connection tubes.

4,226,228
MULTIPLE JOINT RETRACTOR WITH LIGHT

Hee J. Shin, and Jung H. Shin, both of 195 Haggerty Ave., Phillipsburg, N.J. 08865

Filed Nov. 2, 1978, Ser. No. 957,008
Int. Cl.[3] A61B 1/06
U.S. Cl. 128—20 9 Claims



1. A surgical retractor for use within a surgical cavity, the retractor comprising retracting means and illuminating means, said retracting means comprising an inward surface and an outward surface, said outward surface conformingly contacting said cavity, said illuminating means comprising a plurality of electric lamps held in electrical contact by mounting means located upon said inward surface for directing illumination within said cavity, said mounting means being connected by

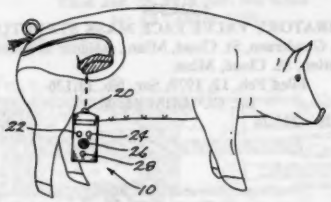
electrical conductor means to a source of electric power, said retracting means comprising a plurality of flexible segments adjustably connected at pivotal connecting joints so as to afford a different pattern of illumination and a different contour for conformance with the surgical cavity.

4,226,229

ANATOMY TESTING DEVICE

Thomas D. Eckhart, R.R. 2, Nevada, Iowa 50201; Richard L. Nelson, Oelwein, and Jack M. Hoglan, Independence, both of Iowa, assignors to Thomas D. Eckhart, Nevada, Iowa

Filed Mar. 31, 1978, Ser. No. 892,264
Int. Cl.[2] A61B *10/00*
U.S. Cl. 128—66 **8 Claims**



1. A pregnancy testing device comprising:
a housing having an outer surface, said housing being of a size capable of being held in one hand;
a transducer probe located on said outer surface of said housing,
a first indicator light on said housing for indicating proper contact of said probe with an animal's body;
a second indicator light on said housing to indicate a positive pregnancy in said animal;
an audio alarm on said housing for indicating a positive pregnancy in said animal;
a circuit means within said housing for actuating said probe to transmit ultrasonic pulses into said animal and to receive echo pulses sensed by said probe;
a first analyzer portion of said circuit means for analyzing echoes received during a first time interval from said pulses transmitted into said animal, said first analyzer portion of said circuit being connected to said first indicator light and being adapted to turn on said first indicator light during said first time interval in response to receipt of echoes of predetermined characteristics caused by the tissue of said animal;
a second analyzer portion of said circuit means for receiving and analyzing echo signals during a second interval of time from said pulses transmitted into said animal, said second analyzer portion being connected to said second indicator light and said audio alarm and being adapted to turn on said second indicator light and said audio signal during said second time interval in response to echoes of predetermined characteristics caused by amnion fluid in the uterus of said animal; and
power means within said housing for powering said circuit means.

4,226,230

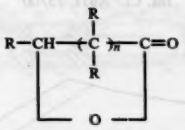
ORTHOPEDIC DEVICES, MATERIALS AND METHODS

James E. Potts, Millington, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 881,138, Feb. 24, 1978, abandoned. This application Mar. 27, 1979, Ser. No. 24,320
Int. Cl.[3] A61F *5/04*
U.S. Cl. 128—90 **8 Claims**

1. Method of applying an orthopedic cast to a portion of a human or animal body which comprises:
(A) heating a flexible bandage material suitable for forming an orthopedic cast, comprising a substrate in the form of a netting, the strands of said netting having on their surfaces a coating comprising a crosslinked copolymer, said crosslinked copolymer being produced by crosslinking a thermoplastic, crosslinkable copolymer which is produced by

the process which comprises reacting, at a temperature from 25° to 300° C., an active-hydrogen containing initiator with a molar excess of a monomer mixture comprising:
(i) from 80 to 99.5 weight percent of at least one lactone of the formula



wherein n is an integer having a value from about 3 to 6, at least N+2 of the R's are hydrogen and the remaining R's are each alkyl or 1 to 10 carbon atoms; and
(ii) from 0.5 to 99.5 weight percent of a polyfunctional acrylate monomer
to a temperature above the softening point of the crosslinked copolymer;
(B) wrapping the heated bandage material around the body portion in a repetitive manner to form overlying layers of bandage material conforming in shape to the body portion and forming an encasement therefor;
(C) applying sufficient pressure during and after wrapping to the overlying layers to ensure contact which causes fusion of the overlying layers into a unitary structure encasing the body portion; and
(D) cooling the applied layers of bandage to form a rigid, unitary structure.

4,226,231

FRACTURE BOARD

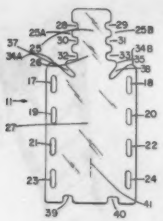
Arthur L. Andersen, Rte. 1, Box 1891, Anderson, Calif. 96007

Filed Nov. 8, 1978, Ser. No. 958,736
Int. Cl.[3] A61F *13/00*
U.S. Cl. 128—134 **17 Claims**

1. A fracture board for use in the handling of an injured person at the site of an accident, and for use in the lifting, carrying and transportation of said injured person to a treatment facility, said board comprising a panel having a head portion integrally connected to a lower portion, said portions taken together forming an outline conforming to the outline of the human body,
said lower portion having a plurality of laterally, evenly spaced pairs of slots extending longitudinally and spaced apart from each other, and
a pair of slits emanating from the top edge of the lower

portion angularly disposed toward the vertical centerline of said portion, and

a pair of spaced apart notches along the bottom edge of said board,



and strap means for securing the injured person to the panel adapted to pass over and around the body and through the slots, slits and notches, and having tightening means to hold the injured party to the panel.

4,226,232

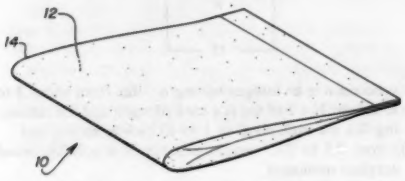
WOUND DRESSING

Wayman R. Spence, Waco, Tex., assignor to Spenco Medical Corporation, Waco, Tex.

Filed Apr. 9, 1979, Ser. No. 28,610

Int. Cl.[3] A61L *15/00*

U.S. Cl. 128—156 **24 Claims**



1. A method for treating a secreting skin wound comprising applying to the wound a gel mixture comprising a water absorbent graft copolymer and water.

7. A gel wound dressing comprising:

(a) a water absorbent hydrolyzed starch-polyacrylonitrile graft copolymer;

(b) water in an amount from about 10% to about 50% of the graft copolymer's water absorbency.

4,226,233

RESPIRATORS

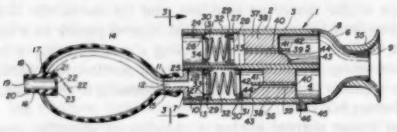
Richard W. Kritzer, Chicago, Ill., assignor to Longevity Products, Inc., Chicago, Ill.

Filed Oct. 10, 1978, Ser. No. 949,402

The portion of the term of this patent subsequent to Oct. 18, 1994, has been disclaimed.

Int. Cl.[3] A61M *16/00*

U.S. Cl. 128—205.13 **10 Claims**



1. A respirator comprising

a. an elongated tubular housing having a mouthpiece at one end thereof for insertion into a person's mouth and to enable the person to

(1) inhale in one direction longitudinally through said housing, and

(2) exhale longitudinally through said housing in the direction opposite to said one direction,

b. means in said housing for vibrating material inhaled and exhaled therethrough, and

c. means connected to said housing for applying positive pressure to material passing through said housing and mouthpiece into such a person's mouth,

d. said last mentioned means having

(1) an inlet passageway thereinto, and

(2) a separate outlet passageway therefrom.

4,226,234

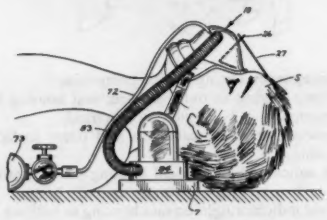
RESPIRATORY VALVE FACE MASK STRUCTURE

Arthur M. Gunderson, St. Cloud, Minn., assignor to RescueTech Corporation, St. Cloud, Minn.

Filed Feb. 12, 1979, Ser. No. 11,136

Int. Cl.[3] A61M *16/00*

U.S. Cl. 128—205.24 **9 Claims**



1. A respiratory valve face mask structure for use in connection with an appropriate pressurized oxygen and air supply, consisting of

a flexible body portion formed to overlie the front portion of a face and the nose and mouth air passages of a subject,

an internal flexible rib projecting from the underside of said body portion adapted to extend about said nose and mouth air passages of said subject and having sealing engagement with said face,

an outward projection of said body portion from said rib forming a chamber,

a valve having a central portion disposed through said projecting portion and said chamber a first end portion and a second end portion each extending outwardly of said projecting portion, said first and second end portions and said central portion having a passage therethrough,

first air ports disposed longitudinally of said central portion of said housing and communicating said chamber with said passages,

said first end portion of said valve housing having second air ports communicating with the atmosphere, said first and portion having a portion thereof forming a first valve seat between said first and second air ports

a pressurized oxygen supply and a pressurized air supply connected to said second end portion of said housing,

said second end portion of said valve housing forming a second valve seat between said pressurized oxygen supply and pressurized air supply and said first air ports,

a valve member slidably disposed within said passage of said housing and being movable to first, second and third positions,

means normally urging said valve member to said first position to engage said second valve seat to seal said air ports from said pressurized oxygen and air supply and to admit the passage of ambient air,

said urging means yielding to a first predetermined pressure of incoming pressurized air from said air supply bearing

against said valve member to said second position for movement of said valve member to engage said first valve seat to seal off the entry of ambient air and pass said pressurized air to said air passages,

said urging means yielding further to a second higher degree of pressure of air within said chamber for movement of said member to said third position communicating said second air ports with said passage.

4,226,235

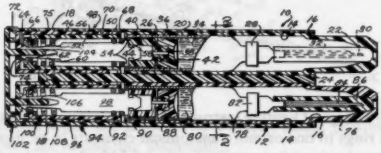
PLURAL INJECTING DEVICE

Stanley J. Sarnoff; George B. Calkins, both of Bethesda, and N. Lawrence Dalling, Gaithersburg, all of Md., assignors to Survival Technology, Inc., Bethesda, Md.

Filed Jan. 25, 1979, Ser. No. 6,555

Int. Cl.³ A61M 5/00

U.S. Cl. 128—218 F **11 Claims**



1. A plural hypodermic needle and plural spring actuated injecting device comprising

outer housing means adapted to be exteriorly manually engaged by a user,

actuating means carried by said outer housing means for movement into an actuating position in response to a manual movement by a user with said outer housing means exteriorly manually engaged as aforesaid,

a first cylindrical liquid container within said outer housing means,

a first hypodermic needle disposed within said outer housing means in a storage position in operative association with said first container,

first plunger means within said outer housing means extending into said first container,

first spring means operatively associated with said first plunger means within said outer housing means,

first releasable means normally retaining said first spring means in a stressed condition within said outer housing means for actuation in response to the movement of said actuating means into said actuating position to effect release of the stressed condition of said first spring means so that the spring force resulting from said release acts upon said first plunger means to move (1) said first hypodermic needle from said storage position to an extended position into the user and (2) liquid within said first container outwardly through said first hypodermic needle into the user;

a second cylindrical liquid container,

a second hypodermic needle operatively associated with said second liquid container,

second plunger means operatively associated with said second liquid container,

second spring means operatively associated with said second plunger means,

second releasable means normally retaining said second spring means in a stressed condition operable upon actuation to effect release of the stressed condition of said second spring means,

safety means operable (1) when in a safety position with respect to both said first and second releasable means to prevent actuation thereof as aforesaid and (2) when removed from said safety position in relation to said first releasable means to permit the actuation of said first releasable means as aforesaid and from said safety position in relation to said second releasable means to permit actuation thereof, and

means mounting said second container, said second hypodermic needle, said second plunger means, said second spring means and said second releasable means within said outer housing means in operative relation to one another as aforesaid so that when said safety means is removed from said safety position in relation to said second releasable means the latter will be actuated as a result of the actuation of said first releasable means so that the spring force resulting from the release of said second spring means by said second releasable means acts upon said second plunger means to move (1) said second hypodermic needle longitudinally outwardly into an extended position into the user in generally side-by-side relation to said first hypodermic needle and (2) liquid within said second container outwardly through said second hypodermic needle into said user.

4,226,236

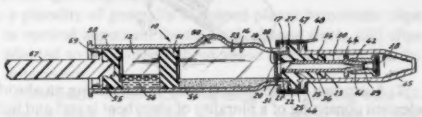
PREFILLED, VENTED TWO-COMPARTMENT SYRINGE

Joseph N. Genese, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed May 7, 1979, Ser. No. 36,927

Int. Cl.³ A61M 5/00

U.S. Cl. 128—218 M **16 Claims**



1. A prefilled, vented, readily activated syringe assembly adapted to receive a hypodermic needle comprising:

a barrel member defining a substantially tubular chamber having a wall portion;

a nozzle portion communicating with said tubular chamber;

a hydrophobic filter element operatively associated with said nozzle portion of said barrel member;

a holder member in sealing arrangement with said nozzle portion and positioned outwardly from said filter element;

means to retain said holder member on said nozzle portion;

passage means defined by said holder element;

a piercing tubular member having a piercing point, slidably positioned in said passage means of said holder member and said piercing point spaced from said filter element;

a first stopper in slidable and sealing engagement in said tubular chamber to provide a compartment for a first flowable medicinal material;

a second stopper adapted to receive a plunger rod in slidable and sealing engagement in said tubular chamber of said barrel member and spaced from said first stopper to provide a compartment for a second flowable medicinal material;

means constructed and arranged in combination with said first and second stoppers and said barrel member to provide upon movement of said first stopper toward said second stopper fluid communication between said compartments for said first and second medicinal materials;

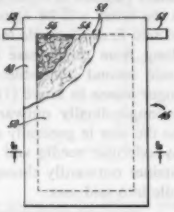
whereby upon movement of said second stopper in the direction of said first stopper, intermixing of said first and second medicinal materials will be effected with emission of air through said filter element; upon subsequent movement of said piercing tubular member toward said filter with a piercing thereof; attachment of said hypodermic needle to said piercing tubular member; and upon further movement of said second stopper toward said first stopper substantially; all of said medicinal materials will be expelled from said syringe.

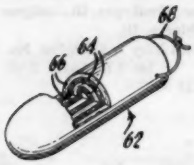
4,226,237

LAYERED ABSORBENT STRUCTURE

Yvon G. Levesque, Montreal, Canada, assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Jan. 30, 1979, Ser. No. 7,279
Int. Cl.[3] A61F *13/20, 13/16*
U.S. Cl. 128—285 13 Claims





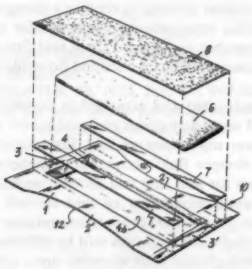
1. A product for absorbing body fluids having an absorbent element consisting of a plurality of absorbent layers and including at last first and second adjacent absorbent layers; said first layer comprising cellulose fibers and said second layer comprising, in admixture, peat moss and finely divided ground mechanical wood pulp in a weight ratio of at least about 0.35 grams of said mechanical wood pulp per gram of said peat moss; said ground wood pulp having a Canadian Standard Freeness of from about 30 to about 600; whereof said second layer preferentially absorbs at least about twice the weight of absorbed fluid as said first layer.

4,226,238

DISPOSABLE DIAPER

Carlo Bianco, Pescara, Italy, assignor to Fameccanica S.p.A., Italy

Filed Nov. 3, 1978, Ser. No. 957,063
Claims priority, application Italy, Jun. 5, 1978, 24191 A/78
Int. Cl.[3] A61F *13/16*
U.S. Cl. 128—287 16 Claims



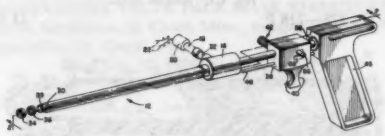
1. A diaper comprising an outer sheet of waterproof plastic material having a recessed area between the sides and ends thereof forming a pad receiving cavity bordered by marginal areas on each side and end, said cavity having a bottom spaced outwardly from said marginal areas, an absorbent pad disposed in said cavity, and a moisture holding strip of plastic overlying at least a part of a marginal area on each side of said cavity and at least a portion of each side of said pad and having at least a portion secured to the outer sheet along the length of said moisture holding strip.

4,226,239

SURGICAL LIGATING INSTRUMENT AND METHOD

Todd J. Polk, Croydon, and Francis E. McGowan, Abington, both of Pa., assignors to KLI, Inc., Newtown, Pa.

Continuation of Ser. No. 725,272, Sep. 21, 1976, abandoned. This application Jan. 31, 1978, Ser. No. 873,852
Int. Cl.[3] A61B *17/00*
U.S. Cl. 128—303 A 70 Claims



1. In a surgical ligating instrument for applying a plurality of elastic rings to one or more anatomical elements to be ligated, said rings having substantially the same width, the combination which comprises:

(a) means on said instrument forming a support for a plurality of elastic rings, said support having an end adjacent which said rings may be stretched adjacent to and in substantial contact with each other;

(b) actuating means movable in increments relative to said support for displacing a plurality of said rings toward said end of said support, one said increment being substantially equal to the width of one of said rings;

(c) control means carried by said instrument for limiting said displacement substantially to the dimension of said increment after one of said rings, but not the adjacent ring, has been displaced off said end, and

(d) said control means including manually adjustable means for subsequently adjusting said control means for permitting said actuating means to displace said adjacent ring off of said end.

4,226,240

SURGICAL FORECEPS

William E. Walker, Jr., 9th St. & Sugar Estate Rd., St. Thomas, V.I. 00801

Continuation-in-part of Ser. No. 831,221, Sep. 7, 1977, abandoned, which is a continuation-in-part of Ser. No. 706,847, Jul. 19, 1976, abandoned. This application May 30, 1979, Ser. No. 43,796
Int. Cl.[3] A61B *17/28*
U.S. Cl. 128—321 17 Claims

1. A surgical forceps comprising a pair of cross members having securing means for pivotally securing the members to one another, said cross members having a first set of arms extending in a first direction from the securing means and a second set of arms secured to said first set of arms and extending in an opposite direction from said securing means, said first set of arms adapted with gripping means for pivoting said first set of arms and said second set of arms about the securing means; the second set of arms comprising a pair of end members substantially disposed in a plane containing the first set of arms and directed away from the longitudinal axis of the first set of arms, and the extremity of the end members terminating with a set of mating jaws disposed in a plane substantially perpendicular to the plane containing the securing means, said set of jaws comprising a first jaw having spaced-apart notches

disposed in its outer lengthwise edge and a second jaw having a like number of notches disposed in its outer lengthwise edge

such that when the jaws are in a closed mated position, the notches are in abutting alignment.

4,226,241

SURGICAL FORCEPS

William E. Walker, Jr., 9th St. & Sugar Estate Rd., St. Thomas, V.I. 00801

Continuation of Ser. No. 831,221, Sep. 7, 1977, abandoned, which is a continuation-in-part of Ser. No. 706,847, Jul. 19, 1976, abandoned. This application Jun. 26, 1979, Ser. No. 52,194

Int. Cl.[3] A61B *17/28*

U.S. Cl. 128—321 **4 Claims**

1. Surgical forceps comprising a pair of cross members having securing means for pivotally securing the cross members to one another, said cross members having a first set of arms extending in a first direction from the securing means and a second set of arms secured to said first set of arms and extending in an opposite direction from said securing means, said first set of arms adapted with gripping means for pivoting said arms about the securing means, the second set of arms terminating with a set of equal length mating jaws extending in a plane substantially perpendicular to the plane containing the first set of arms and curved to the anatomical curve of the cervix and wherein the outer edge of each of the extending jaws has three spaced apart notches oriented such that when the jaws are in a closed mated position the jaws are disposed in parallel planes with the notches in abutting alignment, and said notches in each jaw being spaced apart from an adjacent notch by between about $\frac{1}{8}$ and about $\frac{1}{4}$ inch.

4,226,242

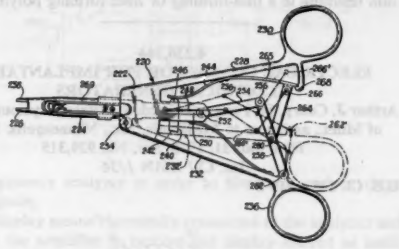
REPEATING HEMOSTATIC CLIP APPLYING INSTRUMENTS AND MULTI-CLIP CARTRIDGES THEREFOR

Robert K. Jarvik, Salt Lake City, Utah, assignor to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 730,933, Oct. 8, 1976, Pat. No. 4,166,466. This application Sep. 13, 1977, Ser. No. 832,972

Int. Cl.[2] A61B *17/12*

U.S. Cl. 128—325 **26 Claims**



1. A hemostatic clip cartridge adapted to be removably mounted on a repeating hemostatic clip applying instrument, said cartridge comprising:

A. a plurality of generally U-shaped planar hemostatic clips in vertical alignment forming a U-shaped stack, said clips adapted to be crushed about tissue one at a time by the instrument;

B. stack-guide means for confining and guiding said U-shaped stack for motion along the vertical axis of said stack;

C. spring means for biasing said stack downward;

D. stop means at the bottom of said stack-guide means for preventing said stack from further downward motion, said stop means cooperating with said stack-guide means to form a rearward aperture for receiving a clip pusher member of the instrument and a forward rectangular slot for passing a single clip;

E. clip-guide means comprising a channel member extending horizontally from said forward slot, the width of said forward slot corresponding to the width of the channel in said clip-guide means; and,

F. quick release interlocking means adapted to interlock with the instrument for quickly mounting and dismounting the cartridge on the instrument so that a plurality of cartridges can be used in a single surgical procedure;

wherein said clip pusher member of the instrument upon which the cartridge is mounted may push the lowermost clip of said stack through said forward slot and into said clip-guide means.

4,226,243

SURGICAL DEVICES OF POLYESTERAMIDES DERIVED FROM BIS-OXAMIDODIOLS AND DICARBOXYLIC ACIDS

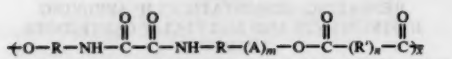
Shalaby W. Shalaby, Lebanon, and Dennis D. Jamiolkowski, Long Valley, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 905,325, May 12, 1978. This application Jul. 27, 1979, Ser. No. 61,339

Int. Cl.[3] A61L *17/00*; A61F *1/00*

U.S. Cl. 128—335.5 **17 Claims**

1. A surgical suture comprising an oriented filament of an alternating esteramide polymer having repeating units represented by



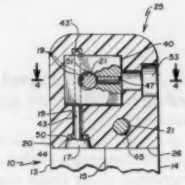
wherein R is a divalent aliphatic or aromatic hydrocarbon radical having from 3 to about 8 carbon atoms, R′ is a divalent hydrocarbon radical having from 1 to about 8 carbon atoms, A is a divalent oxyalkylene radical having from 4 to 8 carbon atoms, m is 0 or 1, n is 0 or 1, and x is the degree of polymerization resulting in a film-forming or fiber-forming polymer.

4,226,244

ELECTRICAL CONNECTOR FOR IMPLANTABLE ELECTRICAL GENERATORS

Arthur J. Coury, St. Paul, and Frank J. Wilary, Plymouth, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Jul. 31, 1978, Ser. No. 929,315
Int. Cl.³ A61N 1/36
U.S. Cl. 128—419 P **1 Claim**



1. An electrical connector for attachment to an implantable electrical generator and for connecting an electrical feedthrough lead of the generator to a lead wire, of which there may be one or more of each, comprising: preformed body means formed of a molded biocompatible plastic material and having one surface thereof adapted to rest on the signal generator for connection thereto, terminal means in said body adapted to receive and connect the feedthrough lead and the lead wire, the terminal means having first and second bore means and the preformed connector means comprising first and second corresponding aperture means respectively associated with the first and second bore means, the first and second aperture means accepting and guiding the feedthrough lead and lead wire respectively into the first and second bore means, and the first bore means extending to the connector surface adapted for contact with the electrical generator.

4,226,245

SYSTEM FOR DETECTING HEART PACEMAKER PULSES

Robert M. Bennett, Jr., Ham Lake, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 6, 1978, Ser. No. 957,815
Int. Cl.³ A61N 1/36
U.S. Cl. 128—419 PT **11 Claims**

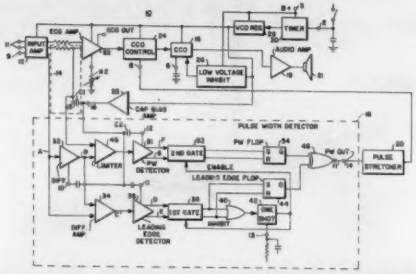
1. Apparatus for accurately detecting the pulse width of simulating pulses applied by an artificial pacemaker to a patient's heart, each of the stimulating pulses comprising a relatively fast rising leading edge followed by an attenuated wave form portion and terminating in a relatively slow falling trailing edge, said apparatus comprising:

wave shaping amplifier means for receiving and amplifying the stimulating pulses along with low frequency noise signals in accordance with a transfer function such that low frequency component signals are amplified with a relatively low gain and higher frequency component signals are amplified with a relatively high gain whereby said noise signals are substantially discriminated against;

first normally deactuated threshold means responsive to the output of said amplifier means of an amplitude greater than a first predetermined level for providing a first output signal indicative of the occurrence of the trailing edge;

differential amplifier means responsive to the output of said amplifier means and to the stimulating pulses and noise signals, for providing a difference output signal corresponding to the difference between the input signals;

second normally actuated threshold means responsive to the difference output of an amplitude greater than a second predetermined level for providing a second output signal indicative of the occurrence of the leading edge;



said transfer function of said amplifier means and said first predetermined level being selected to provide an accurate indication of the occurrence of the trailing edge without prematurely responding to the attenuated wave form portion of the stimulating pulse; and

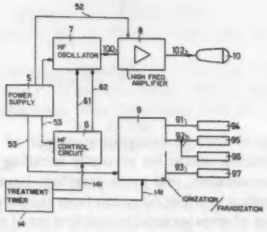
means responsive to the second output signal for disabling said second threshold means and for enabling said first threshold means to initiate detection of the trailing edge of the stimulating pulse.

4,226,246

APPARATUS FOR MAINTAINING THE NEGATIVE POTENTIAL OF HUMAN, ANIMAL, AND PLANT CELLS

Jean Fragnet, Susy-en-Brie, France, assignor to Carba Societe Anonyme, Switzerland

Filed May 23, 1978, Ser. No. 908,638
Claims priority, application Switzerland, May 27, 1977, 6578/77
Int. Cl.³ A61N 1/36
U.S. Cl. 128—420 R **3 Claims**



1. An apparatus for maintaining the negative potential of human, animal and vegetable cells and/or for the penetration of substances into the cells, comprising a generator and control circuit means for producing high frequency pulses of adjustable repetition frequency, amplitude and duration and a d.c. circuit for selectively producing a d.c. voltage and a pulsating d.c. voltage for the ionization and d.c. pulses of predetermined shape and variable repetition frequency for the faradization of the tissue to be treated; means connected to the outputs of said generator and d.c. circuit for selectively applying said high frequency pulses, said ionization voltage and said faradization

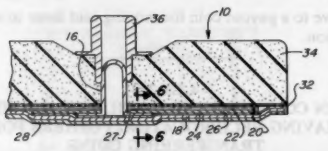
pulses produced thereby to the body; indicator means for indicating the magnitude of signals supplied to said means for applying; connector means in circuit relationship with the outputs of said generator and d.c. circuits for selectively connecting the generator and d.c. circuit outputs to calibration circuit elements having a load characteristic similar to that of the cells to be treated; and means for adjusting the level of signals produced and displayed on said indicator means while said elements are connected, whereby desired signal levels can be established before application thereof to the cells.

4,226,247

BIOLOGICAL ELECTRODE

Ray L. Hauser, and John F. Harris, both of Boulder, Colo., assignors to Hauser Laboratories, Boulder, Colo.

Filed Aug. 21, 1978, Ser. No. 935,480
Int. Cl.³ A61B 5/04
U.S. Cl. 128—641 **4 Claims**



1. A biological electrode for electrically connecting the skin of the human body to an electrical recording or stimulating device, said electrode comprising:

a plurality of longitudinally extending contiguous strands of conducting material, all of said strands lying generally parallel to each other, said strands having first and second opposed surfaces;

a thin layer of sponge rubber attached to said first surface of said strands to maintain them in adjacent parallel relationship;

a bus bar extending across one end of said second surface of said strands and in electrical contact therewith;

an adhesive coated over the remainder of said second surface of said strands to form a conductor/adhesive composite wherein said strands are imbedded in said adhesive, said adhesive being displacable from said strands as said electrode is pressurally applied to the skin so that said second surface of each of said strands contacts the skin substantially along its entire length and said adhesive fills any voids formed by skin and strand irregularities so that said electrode is adhered to the skin in all areas not contacted by said strands; and

an electrical plug connected to said bus bar and extending through said layer of sponge rubber for connection to the electrical recording or stimulating device.

4,226,248

PHONOCEPHALOGRAPHIC DEVICE

Samir H. Manoli, 136 Black Bay Crescent, Thunder Bay, Ontario, Canada

Filed Oct. 26, 1978, Ser. No. 955,029
Int. Cl.³ A61B 7/04
U.S. Cl. 128—773 **12 Claims**

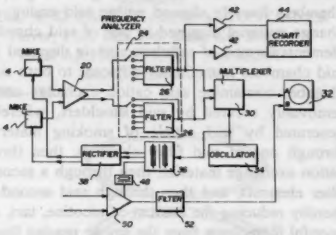
1. A device for monitoring, amplifying and frequency analyzing sounds from the surface and cavities of the head comprising:

(i) a microphone of sufficient sensitivity to detect such sound, the microphone being secured to an ear piece of a shape which permits insertion thereof into a patient's ear and transfer of sounds within the ear to the microphone;

(ii) a head band to which the microphone is secured, to support the microphone in position with the ear piece inserted in the ear of the patient;

(iii) an amplifier electrically associated with the microphone for increasing the output signals from the microphone;

(iv) a frequency analyzer electrically connected to the amplifier whereby signals from the amplifier are passed to the



frequency analyzer in order to filter and analyze those signals;

(v) display means electrically connected to the analyzer and to the amplifier to receive and display filtered or unfiltered signals.

4,226,249

CIGARETTE FIRE EXTINGUISHER

Marion A. Newman, 4812 Gina, Del City, Okla. 73115

Continuation-in-part of Ser. No. 850,585, Nov., 1977, abandoned. This application Apr. 27, 1979, Ser. No. 34,087
Int. Cl.³ A24D 1/10
U.S. Cl. 131—4A **3 Claims**

1. In an elongated smoking article which includes a cylinder of tobacco and cylindrical wrapping of combustible material closely surrounding said tobacco cylinder and being longitudinally coextensive therewith, said smoking article having opposing ends forming, respectively, a mouth end and a fire end, the improvement comprising:

an elongated open end tube formed from combustible material axially disposed within said tobacco cylinder and extending from a point adjacent the mouth end to the fire end;

an elongated liquid containing reservoir within said tobacco cylinder and axially joined to the mouth end of said tube; and,

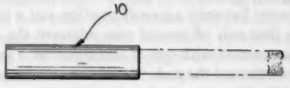
frangible wall means at the juncture of said tube and reservoir normally maintaining the liquid in said reservoir.

4,226,250

SMOKING SYSTEM TO FILTER TOBACCO SMOKE

Seymour Ehrenpreis, and Barry Freedman, both of Skokie, Ill., assignors to Peterson Labs., Inc., Chicago, Ill.

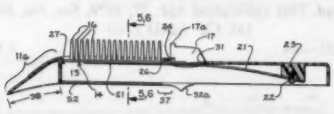
Filed Jul. 12, 1978, Ser. No. 923,980
Int. Cl.² A24F 13/02, 7/04
U.S. Cl. 131—187 **5 Claims**



1. A smoking system to filter tobacco smoke comprising: a hollow casing; a first aperture means disposed at one end of

said casing and adapted to receive an article of smoking material, said first aperture means having a tapered edge; second aperture means disposed at the opposite end of said casing and forming a mouthpiece; a plurality of spaced apart shoulders projecting slightly inwardly from the inner surface of said hollow casing defining a plurality of chambers linearly aligned within said casing; cation exchange material disposed in one of said chambers; filter elements formed of cellulose acetate disposed in each of said chambers immediately adjacent to both sides of the chamber containing said cation exchange material and removably secured by said shoulders, whereby smoke generated by said article of smoking material passes through one of said filter elements, then through said cation exchange material, then through a second of said filter elements, and then through said second aperture, thereby reducing the amount of nicotine, tars, and other harmful ingredients from the smoke passing through said second aperture.

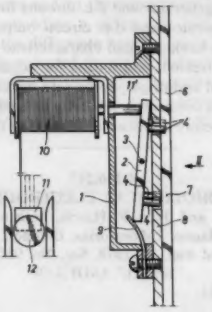
4,226,251
HAIRBRUSH CONSTRUCTION
Albert Wall, 515 S. Crescent Ave., Lodi, Calif. 95240
Continuation of Ser. No. 803,359, Jun. 3, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 14,648
Int. Cl.[2] A45D *44/18*
U.S. Cl. 132—85 **3 Claims**



1. A hairbrush comprising an elongate body including a bristle portion carried by said body, a bristle-free, elongate grip portion at one end of said body of sufficient length to be readily held in the hand of a person using the brush for manipulating the brush, a bristle-free end portion separate from and protruding axially away from said bristle portion adjacent thereto at the other end of said body, the last named said end portion being tapered as viewed in elevation and plan to a degree sufficient to shield the bristles of the adjacent end of said bristle portion to permit said adjacent end of said bristle portion to enter a shock of hair to be brushed, while said grip portion is held for manipulating said brush, said grip portion and said end portion being disposed at opposite ends of said bristle portion to permit said grip portion to be readily held in a person's hand while inserting said tapered end portion into the hair.

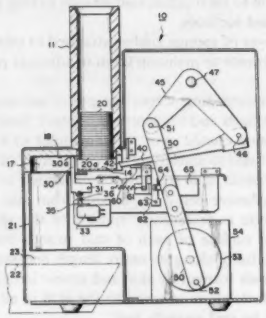
4,226,252
ELECTRO-MECHANICAL WINNINGS DISTRIBUTION ASSEMBLY FOR SLOT MACHINES
Paavo Lahtinen, Kaskenpolttajantie 11, 02340 Espoo 34, Finland
Filed Sep. 28, 1978, Ser. No. 946,572
Int. Cl.[3] G07D *1/00*
U.S. Cl. 133—1 R **4 Claims**

1. An electro-mechanical winnings distribution assembly for slot machines or the like including in combination, means for supporting a pair of adjacent columns of coins on end, a lever, means supporting said lever adjacent to said columns for pivotal movement between a payoff position and a coin retaining position, a first pair of spaced pins adjacent the ends of said lever and associated with one of said columns, a second pair of spaced pins adjacent the ends of said lever and associated with the other of said columns, the pins adjacent one end of said lever and the pins at the other end of said lever alternately respectively entering said columns and being withdrawn from said columns in the two positions of said lever, means normally holding said lever in said coin retaining position and means



responsive to a payout coin for moving said lever to said payoff position.

4,226,253
COIN COUNTING AND DISCHARGE MACHINE HAVING RECIPROCATING PUSHERS FOR TRANSFERRING COINS
Eiichi Kokubo, and Akemi Sugai, both of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan
Filed Nov. 7, 1978, Ser. No. 958,336
Int. Cl.[3] G07D *9/04*
U.S. Cl. 133—4 A **2 Claims**



1. A coin discharge machine for individually discharging the lowermost coin from coins stacked in a cartridge and for transferring the discharged coin to a dropping outlet, said machine comprising:

support means for supporting coins stacked in a cartridge in such manner that the lowermost coin has a portion thereof supported and spaced apart, longitudinally-extending non-supported portions;

a pair of longitudinally-extending rod pushers mounted for continuous reciprocating movement below the cartridge, each of said pushers being formed at an end thereof with an upwardly extending projection, the pushers being mounted in such manner to be movable between raised positions with the projections contacting edges of the nonsupported portions of the lowermost coin and lowered positions with the projections lower than the lowermost coin;

means for axially reciprocating said pushers between the cartridge and a dropping outlet;

means for moving said pushers into said raised positions during forward strokes thereof so that said raised projec-

tions contact edges of the lowermost coin and transfer the coin to the dropping outlet, and for moving said pushers into said lowered positions during rearward strokes thereof so that said lowered projections pass beneath residual stacked coins, the residual coins being supported by said support means after removal of the lowermost coin; and

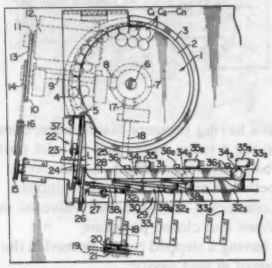
counting means for counting transferred coins and including a count arm positioned between the cartridge and the dropping outlet, said count arm being disposed to be engaged by a center portion of a coin being transferred.

4,226,254

COIN SELECTING AND COUNTING MACHINE

Shingo Mouri, and Nobuo Ueda, both of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Jan. 17, 1979, Ser. No. 4,213
Claims priority, application Japan, Jan. 25, 1978, 53/6973
Int. Cl.³ G07D *9/04*
U.S. Cl. 133—8 E **5 Claims**



1. A coin selecting and counting machine for selecting and counting a number of mixed coins in accordance with the kinds thereof on the basis of the differences in their diameters, including a rotary disc made rotatable for discharging the mixed coins by the centrifugal force thereof, and a selecting and counting track extending downstream of said rotary disc and formed at its bottom with a number of selecting holes of sizes corresponding to the kinds of the mixed coins for receiving the discharged mixed coins to allow the same to fall into the corresponding selecting holes, while being unidirectionally conveyed one by one, so that they may be selected and conveyed,

wherein the improvement comprises: said selecting and counting track including a guide rail section extending downstream of said rotary disc for guiding the discharged mixed coins, a curved rail section extending downstream of said guide rail section for changing the moving direction of the mixed coins to force the same into contact with the curved inner wall thereof, and a counting rail section extending downstream of said curved rail section; first conveying means for conveying the mixed coins from said guide rail section to said curved rail section; second conveying means for conveying the mixed coins from said curved rail section through said counting rail section, so that the mixed coins, which might otherwise be non-uniformly located widthwise of said selecting and counting track, have their circumferences forced into contact with the inner wall of said curved rail section and in accordance with the inner wall of said counting rail section; and counting means arranged in said counting rail section for counting each kind of the mixed coins;

wherein said curved rail section includes a curved rail having a large and a small radius of curvature and having an upstream end merged into the downstream end of said guide rail section so that the circumferences of the mixed coins are forced into contact with the inner wall of said curved rail having a larger radius of curvature;

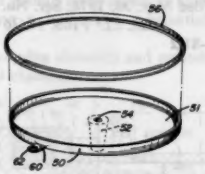
wherein said counting rail section includes a reference rail and a selecting rail, both having their upstream ends merged into the downstream ends of said curved rail section so that the mixed coins are conveyed in contact with the inner wall of said reference rail.

4,226,255

GRILL AND RACK CLEANING CONTAINER

Harold M. Tarrer, P.O. Box 156, Lula, Ga. 30554

Filed Apr. 25, 1979, Ser. No. 33,204
Int. Cl.³ B08B *3/04*
U.S. Cl. 134—117 **3 Claims**



3. A container for storing and cleaning the grill of a barbecue device, comprising:

an imperforate base having a generally cylindrical shape with a circular bottom and upstanding annular side wall attached to said bottom;

a projection formed in the center of said circular bottom extending axially downwardly from the center of said base and having an aperture formed therein for receiving the shaft of the barbecue grill;

a top having a generally cylindrical shape and including a circular upper portion and a depending annular flange, said top being slightly larger than said base for press fitting onto said base and enclosing the interior of said base;

a cleaning solution disposed in said base for cleaning a barbecue grill immersed therein; and

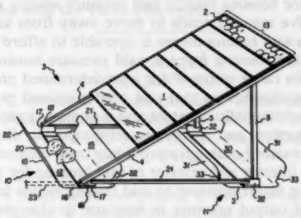
means connected to said container for hanging said container in a convenient location.

4,226,256

SOLAR PANEL ASSEMBLY AND SUPPORT PAD

Wilbur W. Hawley, Northridge, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 18, 1979, Ser. No. 76,539
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—244 **7 Claims**



1. A pad adapted for supporting an associated solar panel assembly, comprising a longitudinally extending base plate having longitudinal edges joined by opposing lateral ends, the length of said base plate adapted to be approximately the width of said associated solar panel assembly, upstanding sides extending along said longitudinal edges of said base plate, flange means at opposite ends of said base plate and near said lateral ends, said upstanding sides having apertures therein along said lateral ends adapted to allow support members from said associated solar panel assembly to reach said flange means, said

upstanding sides and opposed flange means defining an interior volume for receiving and holding weighting material.

2. Apparatus according to claim 1, including a solar panel assembly comprising at least one solar panel, support means for carrying said at least one solar panel, wherein at least one said support pad is fixed to the opposite end of said support means from said at least one solar panel.

4,226,257

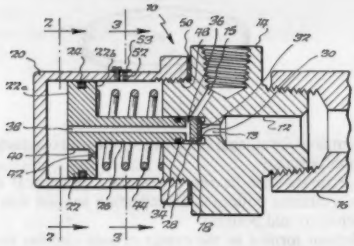
SCUBA REGULATOR

Joseph C. Trinkwalder, North Tonawanda, N.Y., assignor to Sherwood-Selpac Corporation, Lockport, N.Y.

Filed Mar. 30, 1978, Ser. No. 891,637

Int. Cl.³ F16K *17/36*

U.S. Cl. 137—81.2 **2 Claims**



1. In combination with underwater breathing apparatus: a pressure regulator for maintaining a substantially constant output pressure level at a given ambient condition notwithstanding variations in pressure at the source thereof, said regulator having an inlet end portion and an outlet end portion, said inlet portion being adapted for connection to a source of fluid pressure, a pressure chamber disposed intermediate to and in communication with said inlet and outlet end portions for providing a substantially constant pressure level to said outlet end portion, a valve actuator housing disposed adjacent to said pressure chamber, a pressure sensing means mounted in a sealed manner in said valve actuator housing, said pressure sensing means including a valve stem and valve member for movement therewith, said valve stem being slidably disposed in said pressure chamber and said inlet end portion having a valve seat adjacent to said pressure chamber for flow controlling cooperation with said valve member, means for communicating pressure in said pressure chamber to an end surface of said pressure sensing means so that the latter tends to urge said valve member against said valve seat, biasing means in said valve actuator housing biasing said pressure sensing means so that said valve member tends to move away from said valve seat wherein said biasing means is operable to afford substantially a constant biasing force to said pressure sensing means throughout its range of travel for a predetermined pressure in said pressure chamber so that said predetermined pressure is maintained substantially constant and is communicated to said outlet end portion, and a pressure relief opening disposed in said valve actuator housing for providing open communication between the interior and exterior of said housing for transmitting changing water pressure to said biasing means to change the regulator output pressure in response to changing water pressure; the improvement comprising:

orifice means comprising a passage having one end in fluid communication with said pressure chamber and another end in fluid communication with the interior portion of said valve actuator housing in which said pressure relief opening is located for constantly transmitting a minor portion of said predetermined pressure in said pressure chamber from said chamber to said valve actuator housing for exhaustion through said pressure relief opening while the rest of said predetermined pressure is communicated to said outlet end portion, said pressure relief opening having a check valve means operable in conjunction with said pressure relief opening so that ambient water may not pass into said housing through said relief opening when ambient water pressure is greater than the pressure in said housing.

4,226,258

BALL VALVE

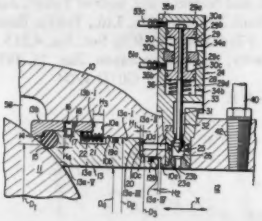
Sadayuki Nakanishi, Kobe, Japan, assignor to Kobe Steel, Limited, Kobe, Japan

Filed Dec. 4, 1978, Ser. No. 966,211

Claims priority, application Japan, Dec. 2, 1977, 52-145487

Int. Cl.³ F04F *1/86*

U.S. Cl. 137—208 **11 Claims**



1. A ball valve having pressure biased seats, comprising:

a housing having a valve cavity and an inlet port;

a rotatable ball valve positioned in the cavity and being movable between open and closed positions;

an actuator connected with the ball valve to move it between its open and closed positions;

said housing having a stepped recess formed in the inner wall surface thereof at said cavity;

a seat retainer positioned in the stepped recess for longitudinal movement toward and away from the ball, and having a stepped configuration complemental to the stepped configuration of the recess, and carrying sealing means for sealing engagement with the wall of the recess to define a sealed chamber;

a seat carried by the retainer in a position to engage the ball valve;

said housing having channel means therein communicating at one end thereof with upstream fluid pressure in the inlet port, and communicating at its other end with the sealed chamber;

a switching valve in the channel means for controlling flow therethrough and including a valve member reciprocable between opposed valve seats, said valve member enabling flow from the inlet port to the sealed chamber when the valve member is in a first position against one of the valve seats and precluding flow from the inlet port to the sealed chamber when it is in a second position against the other valve seat, said sealed chamber being vented to a low pressure area when the valve member is in its second position; and

switching valve actuator means for moving said valve member between its first and second positions, including a cylinder having first and second ends and a transverse dividing wall therebetween separating said cylinder into first and second chambers, a piston assembly having a first piston reciprocable in the first chamber and a second piston reciprocable in the second chamber, said pistons being fixedly secured to each other and to a piston rod connected to the valve member, and fluid pressure control means connected with the ball valve actuator and with the switching valve actuator to introduce fluid pressure into the first chamber to move the piston assembly and the valve member to preclude flow from the inlet port to the sealed chamber when the ball valve actuator is actuated to move the ball valve from open to closed position, and to

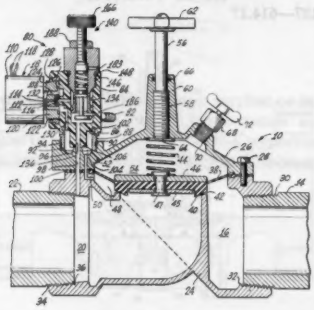
introduce fluid pressure to the second chamber to move the piston assembly and valve member to preclude flow from the inlet port to the sealed chamber when the ball valve actuator is actuated to move the ball valve from closed to open position, said piston assembly and valve member being biased by a spring means in a direction to enable flow from the inlet port to the sealed chamber.

4,226,259

REGULATOR MODULE

Fred J. Szekely, Tujunga, and Charles A. Ray, Arcadia, both of Calif., assignors to Clemar Manufacturing Corp., Azusa, Calif.

Filed Nov. 13, 1978, Ser. No. 959,515
Int. Cl.³ G05D *16/16*; F16K *31/365*
U.S. Cl. 137—269 **17 Claims**



1. In combination with a fluid supply valve, a regulator module for converting said fluid supply valve to a fluid supply and pressure regulating valve, said module comprising:

a housing having a passage formed therein, said passage having an inlet and an outlet, said housing including first fitting means for cooperating with an actuator receiving fitting on said valve for mounting said housing on said valve;

an actuator for selectively opening or closing said passage through said housing, said actuator including second fitting means for cooperating with an actuator receiving fitting on said housing for mounting said actuator on said housing, said first and second fitting means being substantially identical to each other; and

a flow regulator in said passage including a piston disposed for axial reciprocation in a cylinder, a generally cylindrical flow restricting means spaced from said position and secured thereto for axial reciprocation therewith, said flow restricting means disposed adjacent a first open end of said cylinder and having a first surface facing said open end of said cylinder and a second surface facing outwardly of said cylinder and exposed to fluid pressure at the outlet of said passage, and a resilient biasing means between said piston and a second end of said cylinder, said flow restricting means being movable toward said open end into a flow restricting relationship therewith in response to fluid pressure at said outlet and against the force of said biasing means.

4,226,260

SINGLE LEVER FAUCET PLASTIC CARTRIDGE VALVE

William C. Schmitt, Wauwatosa, Wis., assignor to Milwaukee Faucets, Inc., Milwaukee, Wis.

Filed Aug. 29, 1979, Ser. No. 70,557
Int. Cl.³ F16K *43/00*
U.S. Cl. 137—315 **10 Claims**

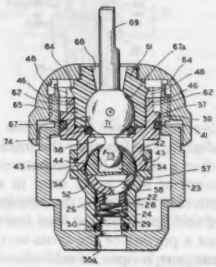
1. A cartridge valve comprising a carrier component having a body portion having a first horizontal hemi-cylindrical cavity and a first pair of spaced wing portions, each extending upwardly adjacent a respective side of said cavity,

hot and cold water inlet passages in the lower end of said carrier component communicating with said first cavity,

a sealing component having a vertical through passage, a lower body portion having a second horizontal hemispherical cavity and a second pair of upwardly extending spaced parallel wing portions, said lower body portion having parallel sides spaced so as to be snugly received between said first pair of wing portions,

first inter-engaging means associated with said first pair of wing portions and said lower body portion for securing said carrier and sealing components in assembled relation thereby forming a horizontal substantially cylindrical chamber,

a cylindrical valve plug slideably and rotatably received in said cylindrical chamber,



said valve plug having a pair of separated co-axial chambers each open at its outer end and each provided with an opening alignable with a respective water inlet passage, said valve plug having an open recess substantially opposite said last mentioned openings,

a retaining component having parallel sides and a hemispherical cavity and adapted to be received between said second pair of wing portions,

second inter-engaging means associated with said second pair of wing portions and the parallel sides of said retaining component for securing said sealing and retaining components in assembled relation,

a lever having an upper and lower ball with the upper ball being received in said hemi-spherical cavity and the lower ball being received in the open recess of said valve plug,

said plug being movable by movement of said lever so as to effect alignment or non-alignment of the water inlet passages with the valve plug openings.

4,226,261

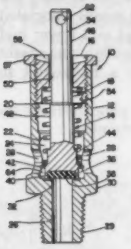
RELIEF VALVE

Charles E. Ekeleme, Jr., and Donald L. Richards, both of Durham, N.C., assignors to Eaton Corporation, Cleveland, Ohio

Filed Feb. 16, 1979, Ser. No. 12,685
Int. Cl.³ F16K *17/20*
U.S. Cl. 137—469 **4 Claims**

1. In a relief valve comprising a body having an inlet port formed therein, a chamber intersecting said inlet port, a valve seat defined by the intersection of said inlet port with said chamber, a valve poppet assembly disposed within said chamber and movable between a first position in engagement with said valve seat and a second position out of engagement with said valve seat, at least one exhaust port formed through said body leading radially outward from said chamber, a spring biasing said poppet assembly into engagement with said valve seat, said spring being enclosed by said body, and an annular channel formed in said body surrounding said valve seat; the improvement wherein said poppet assembly comprises a cylindrical stem member; a counterbore formed in an end of said stem member, the diameter of said counterbore being slightly

smaller than the diameter of said end to define a thin annular wall section therebetween; a resilient valve element received in said counterbore and engageable with said valve seat, the thickness of said valve element being somewhat less than the depth of said counterbore such that the annular wall section extends beyond the outer face of said valve element and into said annular channel when said poppet element is in its first position; a radially extending annular lip formed on said stem member and spaced above said end thereof to define a chamber



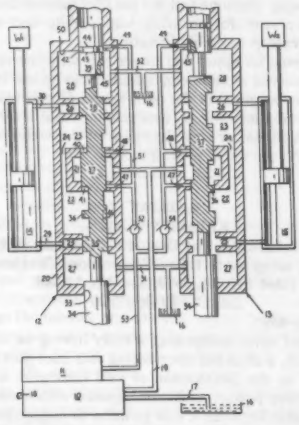
within said valve body above said lip, the outer diameter of said lip being slightly smaller than the inside diameter of said chamber to define a sliding fit therebetween; and means for limiting movement of said valve stem in a direction out of engagement with said valve seat, the relationship between the axial location of said lip and said at least one exhaust port being such that at least a portion of the cross-section area of said at least one exhaust port is open to said chamber above said lip when said valve stem is in its maximum position out of engagement with said valve seat.

4,226,262

LOAD RESPONSIVE CONTROL VALVE

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Filed Nov. 13, 1978, Ser. No. 960,467
Int. Cl.³ F15B *13/08*
U.S. Cl. 137—596.13 **8 Claims**



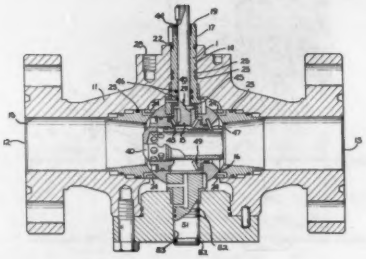
1. A load responsive valve assembly comprising at least one valve housing having an inlet chamber, first and second load chambers, at least one exhaust chamber, and load sensing port means operable through signal conducting passage means to transmit load pressure signal to output flow control means of a pump, direction control means for selectively interconnecting and isolating said chambers and said load sensing port means in a number of control positions including a neutral position and a float position, in said float position said direction control means having means for interconnecting said first and second load chambers with said exhaust chamber, means for isolating said inlet chamber from said first and second load chambers and said exhaust chamber, means on said direction control means for blocking said load sensing port means, and means for connecting said signal conducting means with said exhaust chamber down stream of passages connecting said load chambers with said exhaust chambers.

4,226,263

EROSION CONTROL TRIM IN A CONTROL MECHANISM FOR A BALL VALVE

John D. Muchow, Long Beach, Calif., assignor to Valve Concepts International, Carson, Calif.

Filed Aug. 14, 1978, Ser. No. 933,141
Int. Cl.³ F16K *5/06*
U.S. Cl. 137—614.17 **4 Claims**



1. An improvement for not only controlling the flow of fluid in a conduit but also providing erosion trim control to be used in combination with a ball valve which includes:

a valve body having a bore extending therethrough, said valve body having an inlet and an outlet adapted to be mechanically coupled to the conduit and said valve body also having an aperture therein;

a spherical valve member having a port, the axis of which is alignable with the axis of the bore of said valve body to enable flow through said port, said valve member movable to a position blocking flow through said bore of said valve body;

a stem having an inner end operably coupled to said spherical valve member and an axially outer end which extends through the aperture of said valve body for moving said valve member to and from flow enabling and flow blocking position by moving said stem; and

means for forming a seal between the aperture of said valve body and said stem to block leakage of fluid therebetween, said improvement comprising:

a cylindrical sealing member movably disposed in said port of said valve member and having a central passage, an outer cylindrical sidewall, said cylindrical sealing member having an enclosed end of said central passage and a plurality of oppositely disposed holes in said outer cylindrical sidewall adjacent said enclosed end to form an erosion control trim to direct the flow through said holes into said central passage to impinge upon itself at the center of said central passage of said cylindrical sealing member, said cylindrical sealing member being slidably received and sealed within the port of the spherical valve member, and

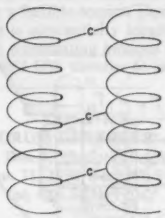
means for moving the position of said cylindrical sealing member in said port of said spherical valve member for exposing said holes in said cylindrical member to regulate the amount of fluid flowing through said holes and said port from exteriorly of said valve body.

4,226,264

ELASTIC AMYLOSE POLYMERS

Douglas J. Bridgeford, Champaign, Ill., assignor to Teepak, Inc., Chicago, Ill.

Continuation of Ser. No. 409,528, Oct. 25, 1973, abandoned.
This application Sep. 2, 1975, Ser. No. 609,476
Int. Cl.[3] A22C *13/00*
U.S. Cl. 738—118.1 14 Claims



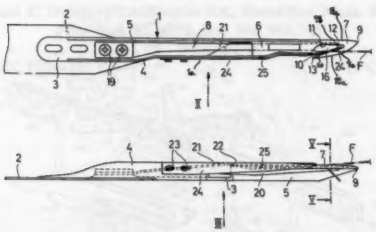
13. An elastic film which comprises amylose or an amylose derivative in substantially helical conformation crosslinked with an agent to provide crosslink sites in a proportion of from 1 crosslink per 500 monomer units to 1 to 10 monomer units.

4,226,265

WITHDRAWING CARRIER FOR LOOMS WITH REMOVAL OF THE FILLING THREAD FROM STATIONARY BOBBINS

Hans Zollinger, Tann-Rüti, Switzerland, assignor to Rüti Machinery Works Ltd., Rüti, Switzerland

Filed Feb. 1, 1979, Ser. No. 8,543
Claims priority, application Switzerland, Feb. 28, 1978, 2130785/78
Int. Cl.[3] D03D *47/20*
U.S. Cl. 139—448 10 Claims



1. A withdrawing carrier for looms with removal of the filling thread from stationary bobbins comprising:

means providing a gripper body for the withdrawing carrier,

a hook having a hook mouth for receiving a filling thread to be engaged and provided for said gripper body;

a pivotable clamping tongue cooperating with said hook for exerting a clamping action upon a filling thread located in said hook mouth;

an additional clamping element for augmenting the clamping action exerted by said clamping tongue; and

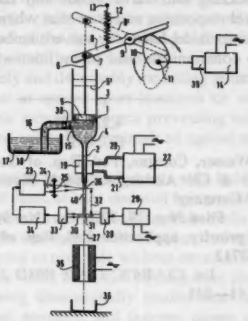
said additional clamping element comprising a clamping spring extending essentially in the lengthwise direction of the gripper body.

4,226,266

PROCESS AND DEVICE FOR DISPENSING A PREDETERMINED AMOUNT OF A LIQUID SUBSTANCE INTO A VESSEL

Jean Guigan, 9, rue Jean Mermoz, 75008 Paris, France

Filed Jun. 8, 1979, Ser. No. 46,965
Claims priority, application France, Jun. 23, 1978, 78 18831
Int. Cl.[3] B65B *3/26*
U.S. Cl. 141—11 13 Claims



1. Process for dispensing a predetermined amount of a liquid substance into a vessel, said process comprising the following steps:

causing a portion of said substance to pass into a tubular part whose lower portion is calibrated tube which is arranged vertically above the vessel,

applying a downwardly directed vertical pressure on the upper surface of the substance which has been taken up in the tubular part,

cooling said lower portion of the tubular part sufficiently to form a continuous vertical thread of frozen substance, and under the influence of said pressure, extruding said thread from said calibrated tube bottom, and

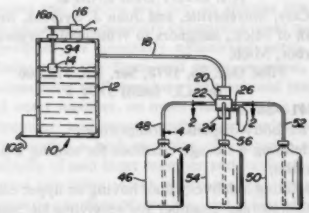
cutting the thread such that a detached portion of predetermined length which has been removed from the thread falls by gravity into the vessel, whereby said detached portion constitutes, after regaining the liquid state, said predetermined dispensed amount.

4,226,267

VENDING MACHINE WITH SELF CONTAINED WATER SUPPLY

Thomas E. Meacham, Jr., Philadelphia, Pa., assignor to Refreshment Machinery Incorporated, Warminster, Pa.

Filed Aug. 29, 1978, Ser. No. 937,698
Int. Cl.[3] B65B *3/26*
U.S. Cl. 141—18 7 Claims



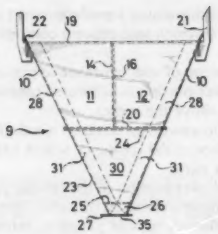
1. An improvement in a vending machine with a self-contained water supply comprising a vending machine having a water tank from which water is to be dispensed, a pump having its outlet connected to said tank, said tank having a means for

controlling operation of said pump in response to the level of water in said tank so that the pump is operative when the water level in said tank is below a predetermined level, a plurality of water storage containers, a valve having a plurality of inlets and a single outlet, said valve outlet being connected to the inlet side of said pump, each valve inlet being connected to one of said storage containers, said valve including a valve member for selectively controlling flow from said inlets to said valve outlet, a motor connected to said valve member, circuitry interconnecting said valve motor and said pump with said liquid level responsive means so that when water in one storage container is depleted, the valve member is moved by said motor to communicate said pump inlet with another of said containers.

4,226,268
FUNNEL

Norbert Wasser, Cologne, Fed. Rep. of Germany, assignor to Walther & Cie Aktiengesellschaft, Koeln-Dellbrueck, Fed. Rep. of Germany

Filed Nov. 29, 1978, Ser. No. 966,315
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2753712
Int. Cl.³ B67C *11/00*; B01D *23/28*
U.S. Cl. 141—331 **12 Claims**



1. A funnel for collecting dust from a filter comprising a body having a plurality of walls; said walls being sloped in the vertical direction and connected to each other to form the inlet and the outlet of the funnel, said body including an upper portion and a lower portion, said upper portion including at least two separate parts and being formed with flanges at a lower end thereof, said flanges extending traversally outwardly from each wall forming said upper portion, and said lower section being formed with flanges at its upper end, said flanges extending transversely outwardly from each wall forming said lower portion to meet said flanges of the upper portion, said flanges of said upper portion being screwed to said flanges of said lower portion.

4,226,269
ICE BODY DISPENSER

Keith E. Carr, Stevensville, and John J. Symons, Benton Harbor, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 26, 1978, Ser. No. 972,806
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—361 **16 Claims**

12. An ice body dispenser comprising:

means defining a storage chamber for storing a plurality of ice bodies;

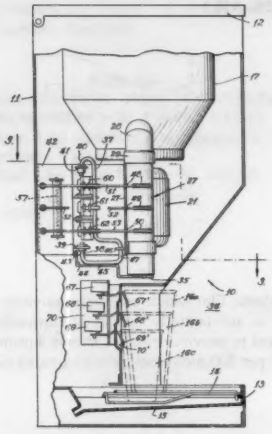
means defining a delivery duct having an upper end opening into said storage chamber for receiving ice bodies therefrom, and a lower end for dispensing ice bodies therefrom;

agitator means in said storage chamber for lifting ice bodies therein and allowing said ice bodies to fall through said duct upper end into said duct;

a control element selectively insertable laterally into said duct at a preselected position intermediate said ends to prevent delivery of ice bodies downwardly therepast;

closure means for selectively closing said lower end;

operating means for concurrently inserting said tined element into said duct and removing said closure means from said lower end to dispense from said duct those ice bodies



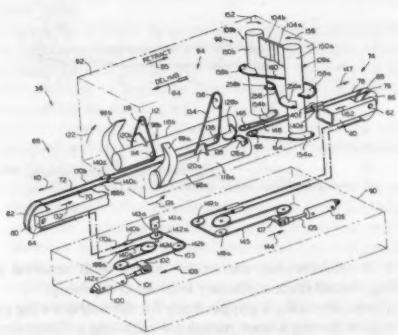
previously delivered thereto from said storage chamber disposed above said closure element and below said preselected position; and

means for causing operation of said agitator means to cause said duct to be refilled with ice bodies upon completion of a dispensing operation.

4,226,270
TREE HARVESTER

Charles R. Sturtz, Jr., St. Joseph, Mich., and Robert W. Joworski, London, Canada, assignors to Clark Equipment Company, Buchanan, Mich.

Filed Dec. 14, 1977, Ser. No. 860,359
Int. Cl.³ A01G *23/08*; B27L *1/00*
U.S. Cl. 144—2 Z **59 Claims**



1. A tree harvester which comprises a first elongated beam member;

a second elongated beam member being longitudinally disposed with respect to said first beam member, being guidingly mounted thereto, and being longitudinally movable in first and second directions with respect to said elongation of said first beam member;

first means for longitudinally moving said second beam member in said first direction;

a third member being guidingly mounted to said second elongated beam member and being longitudinally movable in first and second directions with respect to said elongation thereof;

second means for longitudinally moving said third member in said first direction with respect to said second beam member;

a fourth member being secured to said third member and being movable with respect thereto;

a fifth member being secured to said first beam member; and

means, comprising a flexible tension element having a portion thereof that is substantially longitudinally disposed, for mechanically transmitting motions in first and second directions from said fifth member to said fourth member.

4,226,271

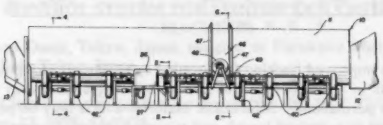
DRUM DEBARKER

Thomas R. Coleman, Rte. 4, Yazoo, Miss. 39194

Filed Jun. 21, 1978, Ser. No. 917,589

Int. Cl.³ B27L *1/04*

U.S. Cl. 144—208 B **4 Claims**



1. An apparatus for debarking logs comprising a drum having cylindrical configuration and open end faces for the ingress and egress of logs, a support stand underlying said drum having a depressed central area and raised side areas, plural arrays of inflated tires carried by said support stand and rotatably supporting said drum, motor means carried on said support stand having a drive mechanism powering at least one of said arrays for rotating said drum, a pair of spaced parallel circumferential flanges disposed on said drum, a tire rotatably carried on said support means, said tire contacting said flanges and being disposed and extending between said flanges such that a radial line from said cylinder coincides with the axis of rotation of said tire, whereby engagement of said tire with said flanges constrains said drum from axial translation.

4,226,272

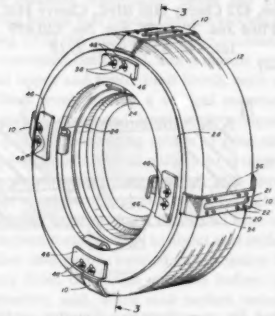
TIRE TRACTION DEVICE

Michael E. Deluty, 37 Addington Rd., Brookline, Mass. 02146

Filed Sep. 22, 1978, Ser. No. 944,746

Int. Cl.³ B60C *27/00*

U.S. Cl. 152—225 C **11 Claims**



1. A removable traction increasing device for use on a vehicle tire comprising:

(a) a plurality of independent separate substantially U-shaped cleats sized and shaped to be adapted to fit around the tire, each said cleat extending and fitting around the outer sidewall, the tread, and the inner sidewall of the tire, each said cleat having traction means on the bottom exterior portion of said cleat for gripping the underlying road surface;

(b) each said cleat having an interior portion sized and shaped to fit loosely around the tire when said cleat is out of contact with the underlying road surface; said interior portion fitting less loosely around the tire when said cleat is in contact with the underlying road surface;

(c) a single cleat holder adapted to be positioned adjacent to the outer sidewall of the tire, said cleat holder being unaffixed to the tire or to the tire's wheel;

(d) means for loosely and detachably mounting said cleats on said cleat holder at spaced-apart locations on said cleat holder, said cleat mounting means preventing said cleats from being urged and solidly maintained against said cleat holder; and

(e) said cleat mounting means including a stud holding base mounted on said cleat, at least one stud being embedded in and protruding from said stud holding base, walls forming an oversized aperture in said cleat holder through which said stud is adapted to protrude without necessarily touching said aperture walls, said stud holding base protruding through and being dimensionally smaller than said cleat holder oversized aperture, and fastener means engaging said stud, said cleat holder adapted to be confined between said cleat and said fastener without necessarily touching either one.

4,226,273

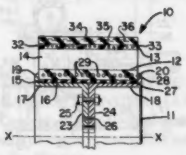
NONPNEUMATIC TIRE AND RIM ASSEMBLY

Barry W. Long, Copley, and Grover W. Rye, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 30, 1978, Ser. No. 920,668

Int. Cl.³ B60C *7/00*

U.S. Cl. 152—326 **6 Claims**



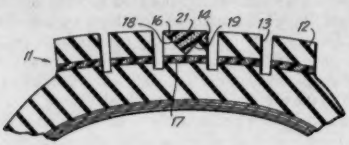
1. A nonpneumatic tire and rim assembly rotatable about an axis comprising an annular rim of substantially rigid material having a generally cylindrical tire-supporting surface, a pair of flanges at the edges of said tire-supporting surface, at least one of said flanges being detachably fastened to said rim for removal to mount and remove said tire, an annular tire of resilient material including a generally cylindrical inner member at the inner periphery, a generally cylindrical outer member spaced radially outward from said inner member, radially extending connecting wall members between said inner member and said outer member, an inner rim-engaging surface on said inner member, said inner member being reinforced by a ply of cords having a high modulus of elasticity extending circumferentially of said inner member and having a radius in the unmounted condition which is greater than the radius of said tire-supporting surface of said rim, and at least a portion of said tire-supporting surface of said rim having a radius greater than radii of adjacent portions of said tire rim-engaging surface in the unmounted condition so that in the mounted condition of said tire on said rim said tire will be held in nonrotatable engagement with said rim.

4,226,274

RUBBER TIRE WITH WEAR INDICATOR THEREIN

Herbert Y. Awaya, 3268 Kilihune Pl., and Ronald S. Hieda, 738 21st. Ave., both of Honolulu, Hi. 96816

Filed Sep. 18, 1978, Ser. No. 943,273
Int. Cl.[2] B60C 11/00
U.S. Cl. 152—330 A 10 Claims



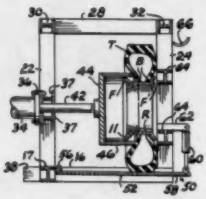
1. A rubber tire, comprising a wear indicator in the general form of the letter K disposed within the tread of said tire, the vertical back of said letter being located at a region such as to indicate, on becoming visible as the result of wear of said tire that said tire is dangerously worn, the two diagonal arms of said letter being disposed for forming a triangle with the road-contact surface of said tire, said vertical back and the space between said arms including a colored component visually distinguishable from the remainder of the tread of said tire, whereby the length of the exposed side of said triangle at said surface of said tire serves as a quantitative measure of the remaining tread in said tire until the back of said letter becomes exposed.

4,226,275

TIRE BEAD BREAKING APPARATUS

Robert R. Robins, 721 N. Woodland, Minneapolis, Kans. 67467

Filed Jan. 31, 1979, Ser. No. 8,018
Int. Cl.[3] B60C 25/06
U.S. Cl. 157—1.2 3 Claims



1. A machine for breaking the beads on the side wall of a tire away from bead seats on a rim having annular outwardly projecting flanges at its ends forming the bead seats and restraining the side walls, said machine comprising:

an upright open frame capable of loosely surrounding a rim mounted tire when vertically positioned therein,

one side of said frame having cross members forming a backstop in the plane of said one side against which the tire and rim are disposed;

ram means supported by the side of said frame opposite said one side for movement toward and away from said backstop;

adjustable platform means underlying said tire and rim for coaxially aligning said rim with an endless ring means,

said platform means including an elongated plate hingedly connected, at one end portion, with a base portion of said frame below said ram means and projecting, at its other end portion, beyond said one frame side in underlying relation with respect to said backstop forming cross members, and,

a hydraulic cylinder pivotally connecting said plate other end portion with one said cross member for vertically moving said plate other end portion toward and away from said cross members; and,

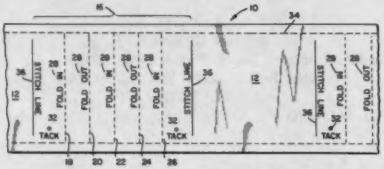
said endless ring means supported by said ram means for coaxially engaging the adjacent side wall of said tire in close spaced circumferential relation with respect to the periphery of the rim flange.

4,226,276

DEVICE FOR PLEATING DRAPERIES

Terry L. Bressler, 255 W. 35th St., New York, N.Y. 10001

Filed Oct. 12, 1978, Ser. No. 950,737
Int. Cl.[2] A47H 1/00
U.S. Cl. 160—348 2 Claims



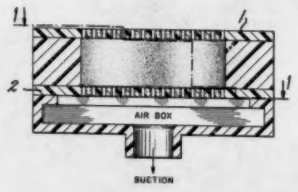
1. An improved backing for forming symmetrical groupings of pleats in a drapery or the like comprising a thin strip of resilient permanently deformable material which may be premeasured to a desired length and mounted in said drapery or the like including a plurality of transverse pleat groupings provided therein, each pleat grouping comprising a discrete plurality of parallel transverse equidistant printed score lines, each such discrete plurality of said score lines being transversely bounded by a corresponding pair of printed stitch lines, said material being permanently deformable by folding along said discrete pluralities of said score lines and otherwise being impermanently resiliently deformable along its length, each of said respective pairs of transverse stitch lines being alignable in overlapping relationship when said material is folded along a discrete plurality of said transverse score lines; a pair of parallel longitudinal stitch lines, each of said stitch lines being equidistant from a respective longitudinal edge of said material; a plurality of aligned paired markings on said material, each of said paired markings corresponding to a discrete plurality of said score lines; and printed indicia adjacent each of said score lines aiding an operator in forming a pleat in each discrete plurality of said score lines.

4,226,277

NOVEL METHOD OF MAKING FOUNDRY MOLDS AND ADHESIVELY BONDED COMPOSITES

Ralph Matalon, 432 Cherry Hill Blvd., Cherry Hill, N.J. 08034

Filed Jun. 29, 1978, Ser. No. 920,499
Int. Cl.[2] B22C 9/12, 1/18
U.S. Cl. 164—7 27 Claims



1. A method for manufacturing foundry molds or cores comprising

(a) forming a green foundry sand around a pattern in a box having at least two air permeable faces, said sand comprising from 94 to 99.9% of a refractory foundry sand and having 0.1% to 6% by weight of an aqueous solution

containing a soluble silicate as a binder, said silicate containing an alkali metal, ammonium, an ammonium complex, or mixtures thereof as a cation and a silicate as the anion, the anion to cation mole ratio being between 1:1 and 4:1, said soluble silicate further containing from 47 to 70% water; and

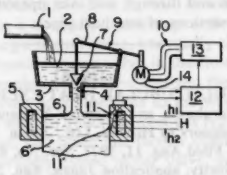
(b) applying a differential pressure between said air permeable faces sufficient to force air therebetween at a rate sufficient in less than two minutes to remove at least 30% of the water contained in said aqueous solution and to harden the sand to an instant tensile strength in excess of that obtainable from hardening said green sand by carbon dioxide gasing.

4,226,278

AUTOMATIC MOLTEN METAL SURFACE LEVEL CONTROL SYSTEM FOR CONTINUOUS CASTING MACHINES

Kozo Osugi, Tokyo, Japan, assignor to Furukawa Metals Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1978, Ser. No. 959,639
Claims priority, application Japan, Nov. 25, 1977, 52/141292; Jan. 13, 1978, 53/2476
Int. Cl.³ B22D 11/16
U.S. Cl. 164—449 3 Claims



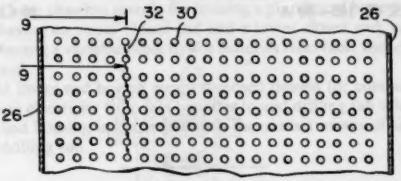
1. In a continuous casting machine for producing ingots having a predetermined sectional area in which molten metal is continuously fed into a molten metal reservoir at a predetermined feed rate and said molten metal in said reservoir is poured into a continuous casting mold through a gate in said reservoir, said reservoir having an aperture that is adjustable under the control of an electric control mechanism, an automatic molten metal surface level control system for the continuous casting machine comprising: upper and lower electric level detecting means that detect that the molten metal surface in said casting mold has reached an upper command limit level or a lower command limit level, and a middle command level between said upper and lower limit levels, each of said upper and lower limit levels having a vertical command deviation from said middle command level; and, a signal generator, coupled to said level detecting means to generate controlling pulses having a predetermined pattern so arranged that when said molten metal surface has reached said upper command limit level the aperture of said gate is first brought to a substantially fully-closed position for a moment's time so as to bring down said molten metal surface to about said middle command level and then said gate is opened to a position that is closed slightly more from the initial aperture before the foregoing control operation, and, when said molten metal surface has reached said lower command limit level, the aperture of said gate is first brought to almost a fully-opened position so as to bring said molten metal surface up to about said middle command level and then, said gate is partially closed to the extent that it is slightly more closed than before the foregoing controlling operation.

4,226,279

METHOD OF SUPPRESSING FORMATION OF HEAT EXCHANGE FLUID PARTICLES INTO STANDING WAVES

Frantisek L. Eisinger, Demarest, and Harry H. Pratt, West Orange, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Aug. 15, 1978, Ser. No. 933,706
Int. Cl.³ F28F 9/22
U.S. Cl. 165—1 4 Claims



1. A method of suppressing the formation of heat exchange fluid particles into standing waves, said heat exchange fluid being passed through a shell, and over a plurality of tube sections disposed transversely across said shell, to effect heat transfer between said fluid and said tube sections, said method comprising the steps of:

(a) disposing a plurality of metal fins within said shell, each of said fins extending parallel to a respective one of said tube sections and parallel to the direction of flow of said fluid through said shell;

(b) arranging said fins to define with at least some of said tube sections a barrier, said barrier being adapted to interrupt movement of laterally extending columns of said fluid particles in a direction perpendicular to the direction of flow of said fluid through said shell; and

(c) connecting said fins to respective tube sections adjacent said fins,

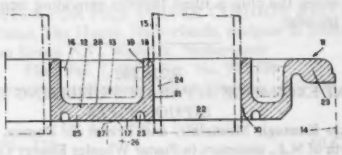
whereby said barriers affect the standing wave frequencies of said columns.

4,226,280

LINER FOR A PERFORATE PLATE OF A HEADER TANK OF A HEAT EXCHANGER HAVING TUBES

Bruno Hellouin de Cenival, Noisy-le-Roi, and Jean-Louis Moulene, Elancourt, both of France, assignors to Societe Anonyme Francaise du Ferodo, France

Filed Feb. 9, 1979, Ser. No. 10,836
Claims priority, application France, Feb. 21, 1978, 78 04942
Int. Cl.³ F28F 9/04
U.S. Cl. 165—69 4 Claims



1. A flexible rubber or rubberlike liner for an apertured plate having collared apertures for a header tank, said liner having holes rimmed with sleeves corresponding to the collared apertures, said sleeves being adapted to be inserted into the collared apertures of the apertured plate for holding a plurality of tubes associated with the header tank, said sleeves, when mounted, being squeezed between the tubes and the collars to effect fluid tightness around the tubes, said liner being designed to effect fluid tightness at the periphery of the header tank and/or between compartments of said header tank, the improvement

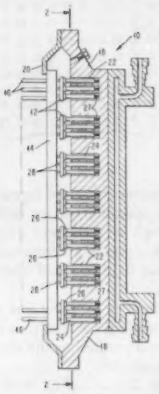
comprising a zone of reduced thickness surrounding each said sleeve whereby a deformation of portions of said liner beyond the zones of reduced thickness is prevented when stress is developed in said sleeves.

4,226,281

THERMAL CONDUCTION MODULE

Richard C. Chu, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 11, 1979, Ser. No. 47,513
Int. Cl.[3] H01L *23/40*
U.S. Cl. 165—80 A **10 Claims**



1. In a thermal conduction module for providing cooling of one or more integrated circuit chips having an exposed surface comprising:

a housing having a surface adjacent the exposed surface of said circuit chips;

a plurality of cylindrical openings adjacent each chip extending into said housing from the surface facing said circuit chips;

a plurality of pin-pistons, one located in each of said plurality of cylindrical openings adjacent each chip and extending therefrom into contact with the exposed surface of said circuit chip;

a spring means located between said housing and each of said pin-pistons to provide a predetermined spring loading force of said pin-piston against the exposed chip surface; and

header means located at the outer end of each of said pin-pistons in contact with the exposed chip surface;

said pin-pistons contacting the exposed chip surface even when the chip is tilted thereby providing improved heat transfer.

4,226,282

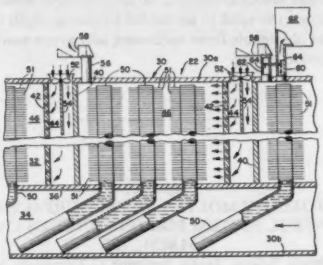
HEAT EXCHANGE APPARATUS UTILIZING THERMAL SIPHON PIPES

Laszlo Kunsagi, Montclair, and Ernest L. Daman, Westfield, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Division of Ser. No. 707,575, Jul. 22, 1976. This application Aug. 30, 1978, Ser. No. 938,242
Int. Cl.[3] F28B *1/06*
U.S. Cl. 165—105 **9 Claims**

4. A heat exchanger for exchanging heat energy from a relatively hot fluid to a relatively cooler fluid comprising:

a heat exchanger housing defined by top, bottom and side walls, a partition dividing the interior of said housing into an upper portion and a lower portion, a plurality of thermal siphon pipes extending through said partition with their respective evaporator sections located in said lower portion and their respective condenser sections located in said upper portion, a plurality of panels internal to said upper portion dividing the upper portion into a plurality of heat transfer compartments and adjacent cooling fluid plenums, said compartments substantially enclosing the upper portions of some of said thermal siphon pipes, the panel dividing each compartment from its respective



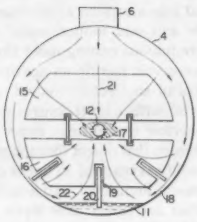
plenum provided with means to substantially uniformly distribute the flow of a cooling fluid from said plenum into said compartment, each compartment provided with an outlet to exhaust the cooling fluid after it has passed over the condenser section of said thermal siphon pipes, means for introducing a flow of cooling fluid into each of said plenums and through said inlet opening to cool said condenser sections of said heat pipes.

4,226,283

MULTITUBULAR HEAT EXCHANGER

Masahiro Furukawa, and Tamotsu Yamane, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 11, 1977, Ser. No. 823,655
Claims priority, application Japan, Aug. 27, 1976, 51-101574
Int. Cl.[2] F28B *9/10*; F28F *9/22*
U.S. Cl. 165—114 **12 Claims**



1. In a feedwater heater comprising a shell, a heating medium inlet formed in said shell, a high temperature tube bundle and a low temperature tube bundle located within said shell and formed by a large number of U-shaped heat transfer tubes for permitting a medium to be heated to flow therethrough so that heat exchange may take place between the medium to be heated and a heating medium introduced into the interior of the shell through the heating medium inlet, and a vent tube interposed between the high temperature tube bundle and the low temperature tube bundle and arranged in the longitudinal direction of the shell for removing noncondensable gas from the interior of the shell, wherein the improvement comprises at least one flow guide plate means located on the outer periphery side of at least the low temperature tube bundle for inducing streams of the heating medium flowing between the shell and the tube bundles to pass on to the vent tube.

4,226,284

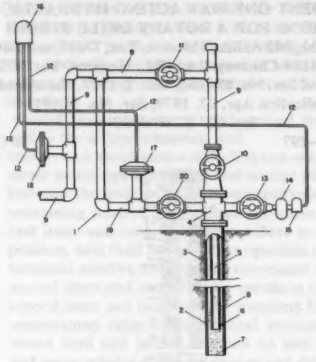
GAS WELL DEWATERING METHOD AND SYSTEM

Jack E. Evans, 5804 Ravella Dr., Farmington, N. Mex. 87401

Filed Jun. 22, 1978, Ser. No. 917,933

Int. Cl.³ E21B *43/12*

U.S. Cl. 166—64 **2 Claims**



1. In an gas well having a casing and tubing string in which liquid collection at the bottom of the well interferes with gas production, a system for shutting off the normal flow of gas, and directing the greater casing pressure down the tubing string as desired intervals that comprises a blow-back line connecting the well casing to a flow line said flow line through which the gas from a normally producing well passes; said blow-back line having a shutoff valve, a normally closed motor valve; a normally opened motor valve in the flow line down stream from the junction of the flow line and the blow-back line; a timer connected by a bleed line to the well head, said bleed line having a shut off valve and first gas regulator and a second gas regulator, said bleed line further connecting from the timer to the normally closed motor valve, and normally opened motor valve.

4,226,285

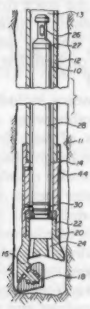
MAGNETIC JUNK RETRIEVER

Meekie D. Moseley, Jr., Rte. 1, Box R-53 G, Beaumont, Tex. 77706

Filed Feb. 12, 1979, Ser. No. 11,378

Int. Cl.² E21B *43/00*

U.S. Cl. 166—65 M **5 Claims**



1. A magnetic junk retrieving system for magnetizing a drill bit on the lower end of a drill stem and magnetically insulated therefrom, comprising

a drilling sub, for connecting a drill bit to the lower end of said drill stem, having a bore extending axially therethrough,

the drilling sub being of a ferromagnetic material,

a wire coil positioned around the circumference of the drilling sub, the wire coil being connected at each end thereof to conductor means, and

contact means connected to said conductor means, extending into the bore of said drilling sub, for contacting a power source when said power source is lowered into the bore of said drilling sub, whereby the coil is energized to create a magnetic force,

said power source comprising an elongated housing having a bore chamber therein for housing a plurality of batteries, having an upper closed end and a lower closed end, and having a variable capacity for batteries receivable therein, and

said lower end having means disposed therein for conducting electricity from said batteries to said drilling sub when said housing is in contact with the contact means of said drilling sub.

4,226,286

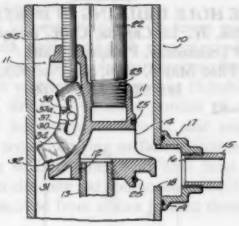
PITLESS ADAPTER

Harold E. Cramer, 10783 County Rd. 9, Findlay, Ohio 45840

Filed Jan. 22, 1979, Ser. No. 5,059

Int. Cl.³ E21B *33/03*

U.S. Cl. 166—85 **4 Claims**



1. In a pitless adapter for use in a well casing to direct water flow through an opening in the well casing to a service pipe, the improvement comprising:

a seal between the pitless adapter and the well casing protected by a projection within the seal area, a segment shaped locking member movable respecting said adapter downwardly and outwardly away from the seal in a segment shaped track in the adapter to firmly engage a well casing wall, and means to cause said movement and to retain said member in actuated position.

4,226,287

APPARATUS FOR PILE DRIVER CUSHION RECOIL

Joost W. Jansz, The Hague, Netherlands, assignor to Hollandsche Beton Groep N.V., Rijswijk, Netherlands

Filed Jul. 7, 1978, Ser. No. 922,538

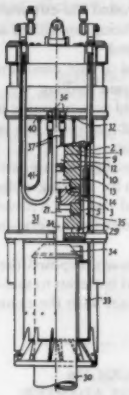
Claims priority, application United Kingdom, Jul. 15, 1977, 29928/77

Int. Cl.³ E02D *7/10, 7/14*

U.S. Cl. 173—126 **10 Claims**

1. Apparatus for driving a pile or similar object by the blows of a hammer in which the impact of a hammer blow is transmitted to the pile through resilient means comprising a precompressed gas, said apparatus comprising at least two variable volume compressed gas chambers, each said chamber being closed to the atmosphere and containing a gas which is precompressed to a predetermined value, the chambers being arranged in series in a path by which the impact of a hammer blow is transmitted to the pile whereby the volumes of the respective chambers are decreased by such impact, the prede-

termined value to which the gas in the chambers is precompressed being such that under the impact of the hammer blow



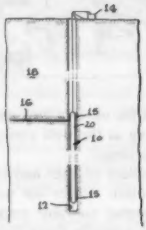
the aggregate of the minimum forces directly available from the respective chambers exceeds the ground resistance.

4,226,288

SIDE HGLE DRILLING IN BOREHOLES

Earl R. Collins, Jr., La Canada, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed May 5, 1978, Ser. No. 903,240
Int. Cl.[2] E21D *10/00*
U.S. Cl. 175—62 **5 Claims**



1. Apparatus useful in forming a side hole in a strata from a location within a borehole that extends into the strata comprising:

boring means which is operable to bore a hole and which includes a flexible elongated portion;

a first series of sheathing members;

a second series of sheathing members; and

means for advancing said boring means and sheathing members into the strata surrounding said borehole while operating said boring means to bore a hole, said means for advancing including means for progressively applying said first and second series of members at opposite sides of said boring means portion while advancing said boring means and sheathing members into the strata surrounding said borehole.

4. A method for forming a side hole from a location along a borehole into the strata surrounding the borehole, comprising:

advancing a substantially flexible boring tool substantially sidewardly through the borehole side wall and into the surrounding strata; and

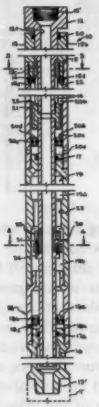
successively applying a series of rigid sheathing sections about said boring tool, substantially rigidly connecting together successive sections to prevent the series of sections from bending to a small radius, and advancing said series of sections into the hole formed by said tool to support said tool against excessive bending as it bores deeply into the strata.

4,226,289

INDEPENDENT ONE-WAY ACTING HYDRAULIC JAR SECTIONS FOR A ROTARY DRILL STRING

Derrel D. Webb, 802 Axilda, Houston, Tex. 77017, and Edwin A. Anderson, 1104 Chimney Rock Rd., Houston, Tex. 77056

Continuation of Ser. No. 856,650, Dec. 2, 1977, abandoned. This application Apr. 27, 1979, Ser. No. 34,181
Int. Cl.[2] E21B *1/10*
U.S. Cl. 175—297 **18 Claims**



1. A hydraulic jar arrangement for incorporating in a drill string for use in a well bore comprising:

a. a first hydraulic jar section for delivering an upward jar to the drill string when it is stuck in the well bore comprising:

1. a first outer tubular member;

2. a first inner tubular member telescopically arranged and terminating within said first outer tubular member;

3. longitudinally spaced seal means between said first inner and outer tubular members forming a first chamber in the drill string for confining hydraulic operating fluid;

4. jarring surfaces on said first inner and outer tubular members for jarring contact with each other to deliver an upward jar to the stuck drill string;

5. longitudinally extending, annular first restriction means on said first outer member within the first chamber;

6. first piston means on said first inner member within the first chamber; and

7. said first piston means including one-way acting fluid meter means operable when said first piston means is between the ends of said first restriction means for restraining relative longitudinal movement of said first inner and outer tubular members to an extended position, said fluid meter means operable after a predetermined relative longitudinal movement between said first inner and outer tubular members to release said first inner and outer tubular members for subsequent unrestrained relative longitudinal movement therebetween until said jarring surfaces on said first inner and outer tubular members engage and deliver an upward jar to the stuck drill string;

b. a second hydraulic jar section for delivering a downward jar to the drill string when it is stuck in the well bore comprising:

1. a second outer tubular member;

2. a second inner tubular member telescopically arranged and terminating within said second outer tubular member;
3. longitudinally spaced seal means between said second inner and outer tubular members forming a second chamber in the drill string for confining hydraulic operating fluid;
4. jarring surfaces on said second inner and outer tubular members for jarring contact with each other to deliver a downward jar to the stuck drill string;
5. longitudinally extending, annular second restriction means on said second outer member within the second chamber;
6. second piston means on said second inner member within the second chamber; and
7. said second piston means including one-way acting fluid meter means operable when said second piston means is between the ends of said second restriction means for restraining relative longitudinal movement of said second inner and outer tubular members to a telescoped position, said fluid meter means operable after a predetermined relative longitudinal movement between said second inner and outer tubular members to release said second inner and outer tubular members for subsequent unrestrained relative longitudinal movement therebetween until said jarring surfaces on said second inner and outer tubular members engage and deliver a downward jar to the stuck drill string;

c. additional spaced seal means between said first inner and outer tubular members and between said second inner and outer tubular members forming an additional chamber in each of said first and second hydraulic jar sections for confining a lubricating fluid;

d. drive means in each of the additional chambers for connecting said first inner and outer tubular members and said second inner and outer tubular members to prevent relative rotation, while accommodating relative longitudinal movement, between said first inner and outer tubular members and between said second inner and outer tubular members respectively;

e. means in the first hydraulic jar section to equalize pressure adjacent one end of each the first chamber and the additional chamber with the pressure in the well bore whereby an upward jarring force may be effected in the stuck drill string independently of any well bore pressure; and

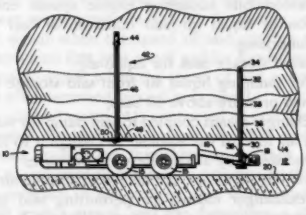
f. means between the second chamber and the additional chamber in said second hydraulic jar section to equalize pressure adjacent one end of each the second chamber and the additional chamber with the pressure in the well bore whereby a downward jarring force may be effected in the stuck drill string independently of any well bore pressure.

4,226,290

ROOF DRILLING SYSTEM

Lawrence H. McSweeney, Rte. #1, South Point, Ohio 45680

Filed Nov. 6, 1978, Ser. No. 957,972
Int. Cl.[2] E21B *17/00;* E21C *1/00*
U.S. Cl. 175—320 **9 Claims**



1. In roof drilling systems for use in subterranean mining applications wherein a drill head is selectively driveably elevated from and lowered to floor level along a drill axis and includes a rotatably driven chuck selectively rotatable in first and second directions having a receiving cavity of fixed peripheral dimension for slideably receiving and laterally abuttably engaging for rotation about said drill axis the driven lowermost part of the drive-in portion of an elongate rod component of roof drill steel, the improvement comprising:

a drill steel assembly component having an elongate portion fixed to and extending from a said drive-in portion, said drive-in portion being configured having a said driven lowermost portion of generally square profile and given maximum cross-sectional dimension, said driven lowermost portion extending a predetermined length to a cylindrical neck portion fixed thereto and having a maximum cross-sectional dimension less than said driven lowermost portion maximum cross-sectional dimension to define a first bearing surface therebetween, said neck portion extending from said first bearing surface and fixed to said elongate portion;

said drill head receiving cavity being configured having a right cross-sectional profile for providing about a 45° extent of rotational lost motion freedom about said drill axis with respect to said driven lowermost portion when the latter portion is inserted thereinto, said receiving cavity profile defining four mutually symmetrically disposed lobes the faces of which define four bearing surfaces of tangency with said drive-in portion lowermost portion upon movement of said cavity in either of said first and second directions; and

retainer means of predetermined thickness mounted upon said drill head, stationary with respect to said receiving cavity and having a non-circular aperture formed therein the profile of which is configured to slideably insertably receive said driven lowermost portion of said drive-in portion, the lowermost surface of said retainer means providing a second bearing surface abuttable against said first bearing surface when said drill head is lowered, whereby said elongate rod component of drill steel may be driveably removed from a bore formed thereby.

4,226,291

REAMER STABILIZER FOR ROCK DRILLS

William R. Spelts, P.O. Box 208, Logan Lake, British Columbia, Canada (V0K 1W0)

Filed Feb. 13, 1979, Ser. No. 11,873
Int. Cl.[2] E21B *9/22;* E21C *17/00*
U.S. Cl. 175—325 **5 Claims**

1. Reamer and stabilizer apparatus for rock drilling equipment comprising:

(a) an elongated body member having a threaded socket at one end for connection to a threaded end of a drill stem,

(b) means at the other end of the body member for connecting a drill bit thereto,

(c) the body member having a plurality of circumferentially spaced recesses having longitudinally spaced apart end walls,

(d) a plurality of roller units, each unit having an axle and a roller rotatably mounted thereon, and each axle having a slidable fit between the end walls of each of the recesses,

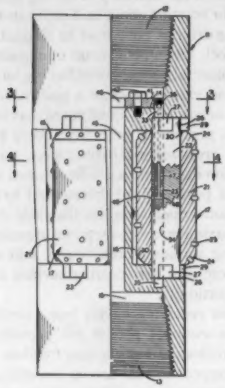
(e) each axle having a longitudinally extending keeper pin passage opening out of the ends thereof,

(f) bores extending between each recess wall and threaded socket aligned with the passages through the axles,

(g) keeper pin retainer sockets opening out of the opposite end walls of the recesses aligned with the bores,

(h) a keeper pin extendable through the threaded socket and through each axle passage and engaging an associated

keeper pin socket for releasably securing the axles within the recesses,



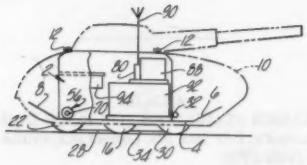
(i) means releasably secured to the body within the threaded socket for preventing withdrawal of the keeper pins from the respective axles.

4,226,292

MINIATURE TARGET VEHICLE

Anthony J. Monte, 47660 Bluebird, Utica, Mich. 48087, and Ernest C. Wahoski, 20489 Lancaster, Harper Woods, Mich. 48225

Filed Feb. 1, 1979, Ser. No. 8,319
Int. Cl.[3] B62D *55/02*; F41J *9/02*
U.S. Cl. 180—6.5 **5 Claims**



1. A track-laying miniature target vehicle simulating a combat tank in appearance and having an exoskeletal basic supporting structure, comprising:

a. a metal five-sided box open at the bottom;

b. Two supporting axles mounted on opposite sides of the box approximately midway between the ends of the box and in axial alignment, each axle supporting two road wheels for rotation on a common axis by means which secure the two road wheels against relative rotation;

c. a second axis of rotation adjacent one end of the box;

d. fifth and sixth road wheels, one on each side of the box coplanar with one of said two road wheels on the same side of the box and mounted on the box for rotation on said second axis of rotation;

e. a pair of drive means, one for each of the fifth and sixth road wheels, carried by the box closely adjacent to its associated road wheel and drivingly connected to it;

f. a third axis of rotation adjacent the end of the box opposite to that of said second axis;

g. seventh and eighth road wheels, one for each side of the vehicle;

h. means mounting the seventh and eighth road wheels for rotation on said third axis, each of said seventh and eighth road wheels being coplanar with the remaining one of said two road wheels on the same side of the box;

i. first and second drive belts connecting the fifth and sixth road wheels respectively with their corresponding coplanar road wheels;

j. third and fourth drive belts connecting the seventh and eighth road wheels respectively with their corresponding coplanar road wheels; and

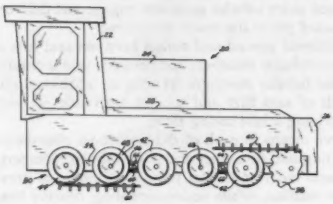
k. a bottom plate secured to the open side of said box at the bottom thereof, said plate having extensions at each end forming ramps with extend upward and away so as to constitute approach ramps as determined by the direction of motion.

4,226,293

TRACK-LAYING VEHICLE WITH IMPROVED SUSPENSION

Ron D. Bieker, McCook, Nebr., assignor to Miller W. Corporation, Stratton, Nebr.

Filed Mar. 16, 1979, Ser. No. 21,149
Int. Cl.[3] B62D *55/06*
U.S. Cl. 180—9.5 **10 Claims**



1. A track-laying vehicle having a longitudinal main body carried by and between a pair of fore-and-aft track units pivoted at their rear ends to the body on a common transverse pivot axis for vertical oscillation relative to each other and to the body and cross-connected at their front ends to the body by transverse equalizer means, characterized in that the equalizer means comprises parallel linkage means pivoted at opposite ends respectively to the track units on vertically spaced apart pivot axes and pivoted intermediate its ends to the body at its longitudinal centerline on vertically spaced apart pivot axes.

4,226,294

ENGINE SYSTEM USING LIQUID AIR AND COMBUSTIBLE FUEL

Albert L. Latter, Marina del Rey; R. Philip Hammond, and James L. Dooley, both of Santa Monica, all of Calif., assignors to R & D Associates, Marina del Rey, Calif.

Filed Nov. 6, 1978, Ser. No. 958,056
Int. Cl.[3] B60K *3/02*; F01K *25/06*
U.S. Cl. 180—54 B **16 Claims**

1. An automobile expansion engine system employing a combination of liquid air and combustible fuel as energy sources comprising:

an insulated storage tank for liquid air;

means for pumping liquid air from said storage tank to an elevated pressure above 50 bars;

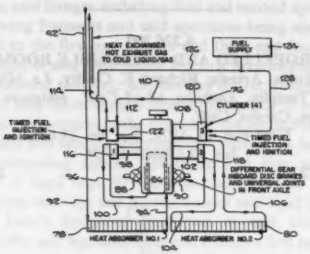
heat exchanger means coupled to said pump for warming the liquid air toward the ambient to change it to the gaseous state substantially at said elevated pressure;

expansion engine means, connected to receive air from said heat exchanger means, for permitting said air at high pressure to expand and perform useful work;

additional heat exchange means for receiving air from said expansion engine means and for further warming the partially expanded air toward the ambient;

means for supplying combustible fuel to said partially expanded air;

means for burning said fuel with a part of the oxygen in said partially expanded air and raising the temperature and pressure of said partially expanded air; and


HEAT EXCHANGER HOT EXHAUST GAS TO COLD LIQUID/GAS
FUEL SUPPLY
CYLINDER (4)
TIMED FUEL INJECTION AND IGNITION
TIMED FUEL INJECTION AND IGNITION
DIFFERENTIAL GEAR INBOARD DISC BRAKES AND UNIVERSAL JOINTS IN FRONT AXLE
HEAT ABSORBER NO.1
HEAT ABSORBER NO.2

additional expansion engine means for further expanding said heated air and the associated combustion products and obtaining additional useful work therefrom.

4,226,295

GEAR SHIFT SYSTEM AND METHOD WITH OPTIONAL GAS PEDAL CONTROLLED SHAFT INITIATION

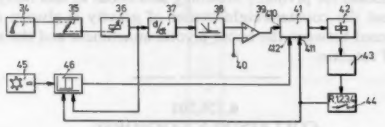
Helmut Rembold, Möglingen; Ernst Linder, Muhlacker, and Ferdinand Grob, Besigheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 6, 1978, Ser. No. 883,873

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1977, 2714559

Int. Cl.[2] B60K *20/16*

U.S. Cl. 180—335 **52 Claims**



1. In an automotive vehicle having a gas pedal (**34**), an engine having a throttle valve (**35**) coupled to said gas pedal, gearing (**43**), gear speed sensor means (**45**) for furnishing a transmission speed signal indicative of the speed of said gearing, and gear shift means (**42**) for changing gear ratios in said gearing in response to shift command signals, a system for furnishing said shift command signals to said gear shift means, comprising, means (**36–39**) connected to said gas pedal for furnishing a desired gear shift signal only when the magnitude of rate of change of position of said gas pedal exceeds a predetermined magnitude;

shift enable signal furnishing means (**46, 80**) connected to said gear speed sensor means, for furnishing an up-shift enable signal when the speed of said gearing exceeds a predetermined first gear speed and for furnishing a down-shift enable signal when the speed of said gearing is less than a predetermined second gear speed;

and gear control means (**41**) connected to said desired gear shift signal furnishing means and said shift enable signal furnishing means, for furnishing an up-shift command signal to said gear shift means in response to the simultaneous presence of said desired gear shift signal and said up-shift enable signal, and for furnishing a down-shift command signal to said gear shift means in response to the simultaneous presence of said desired gear shift signal and said down-shift enable signal.

4,226,296

FRAME OF MOTORCYCLES

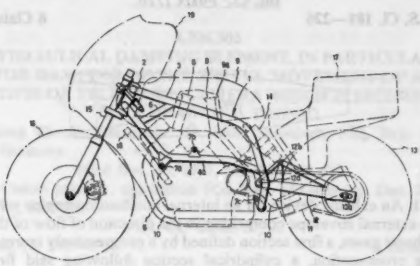
Kazuo Higaki, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 25, 1978, Ser. No. 945,297

Claims priority, application Japan, Sep. 30, 1977, 52/118061

Int. Cl.[2] B62D *61/02*

U.S. Cl. 180—219 **9 Claims**



1. A motorcycle frame for dependently supporting an engine, comprising: a forward steering head; a pair of laterally spaced-apart upper tubes; a pair of laterally spaced-apart lower tubes, the forward end of each of the tubes being welded to the steering head, the rearward ends of the upper tubes, the lower tubes being welded to the upper tubes at locations spaced forwardly from the rearward ends of the rear portions of the upper tubes being downwardly bent, the intermediate portions of the lower tubes being laterally spaced-apart sufficiently to receive and embrace said engine; at least one upper connector tube laterally interconnecting said upper tubes; at least one lower connector tube laterally interconnecting said lower tubes, the frame being devoid of structure which can interfere with the entry of said engine between said intermediate portions; and bracket means on said frame for dependently suspending said engine between said intermediate portions.

4,226,297

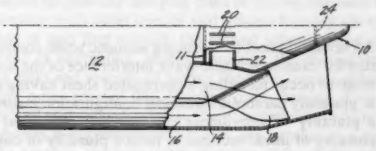
ACOUSTIC TREATED EXHAUST PLUG FOR TURBINE ENGINE

Dennis E. Cicon, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jan. 12, 1979, Ser. No. 3,434

Int. Cl.[2] F01N *1/00*; G10K *11/04*; F02K *1/26*

U.S. Cl. 181—213 **4 Claims**

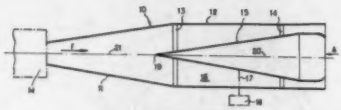


1. In combination, a hollow tail cone plug mounted in the exhaust stream of a turbine type power plant, means for suppressing sound noise in the low frequency range including a plurality of elongated slots having their major axis disposed parallel to the grazing flow spaced circumferentially in the outer skin of the plug and communicating with the cavity portion of the plug, each slot having a hollow depending member extending from the slot radially inward in said cavity defining a volume for supporting a column of air, said volume and the volume of said cavity being selected to tune said suppressing means for the desired frequency of peak attenuation of the noise propagated by the grazing flow.

4,226,298
EXHAUST DEVICE FOR INTERNAL COMBUSTION ENGINES

Guy H. Bancel, 83, rue Petit, 75019 Paris, France, and Francois N. E. Varigas, Paris, France, assignors to Guy Henri Bancel, Paris, France

Continuation of Ser. No. 736,937, Oct. 29, 1976, abandoned.
This application Jul. 17, 1979, Ser. No. 58,378
Int. Cl.[3] F01N 1/16
U.S. Cl. 181—226 6 Claims

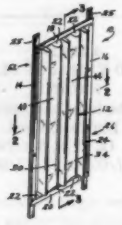


1. An exhaust device for an internal combustion engine with an external envelope comprising in the direction of flow of the exhaust gases, a first section defined by a progressively increasing cross-section, a cylindrical section following said first section the diameter of which is equal to the greater diameter of said first section, and said cylindrical section being further defined with its interior provided with a streamlined member with an ogival or conical surface which is substantially coaxial with said cylindrical section and the vertex of which is upstream, exhaust gases flowing without any perturbation of the fluid stream inside said first section and, after, through a progressively decreasing cross-section, between the streamlined member and the cylindrical section of the envelope.

4,226,299
ACOUSTICAL PANEL

Lawrence F. Hansen, Minneapolis, Minn., assignor to Alphadyne, Inc., Minneapolis, Minn.

Filed May 22, 1978, Ser. No. 908,545
Int. Cl.[3] G10K 11/04; E04B 1/99
U.S. Cl. 181—284 23 Claims

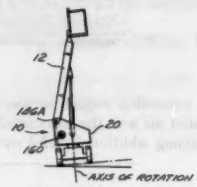


1. An acoustic panel for reducing acoustic noise comprising:
means for causing acoustic wave interference of the acoustic noise to occur including a corrugated sheet having a wall of generally parabolic sinusoidal configuration made up of a plurality of curvilinear sections interconnected by a plurality of linear sections to form a plurality of corrugations wherein given sound waves over a selected frequency spectrum striking said wall are segregated into their respective frequency components and are reflected from said wall and phase shifted to meet a complementing frequency component to yield a total phase shift of approximately one hundred and eighty degrees;
said corrugated sheet being bounded by a plurality of edges and having a first dimension generally parallel to the corrugations and a second dimension generally perpendicular to the first dimension; and
means connected to said edges extending along said second dimension for enabling said corrugated sheet to dissipate acoustic energy by pumping when selected low frequency acoustic energy is applied to the corrugated sheet, said means including a flange member attached to at least one of said last-mentioned edges, said flange member having selected thickness and width to establish the transaxial stiffness-compliance of said panel such that said panel pumps when acoustic energy below approximately 160 Hertz is applied to the wall of said panel.

4,226,300
SELF PROPELLED AND EXTENSIBLE BOOM LIFT

Rallie P. Rallis, Artesia; Richard E. Cullity, La Mirada, and Lyle R. Tamplin, Anaheim, all of Calif., assignors to Mark Industries, Carson, Calif.

Filed Feb. 21, 1979, Ser. No. 13,689
Int. Cl.[3] B66F 11/04
U.S. Cl. 182—2 13 Claims

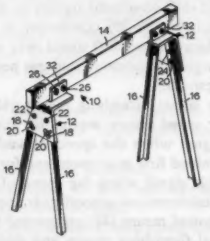


1. In a lift, the combination of
a self propelled frame;
a boom; and
a body mounted on said frame so as to be selectively rotatable thereon about an axis of rotation; said body including
(a) a counterweight with a center of gravity, said counterweight being fixed to said body so as to form a portion thereof which is most remote from the axis of rotation, and
(b) means for pivotally attaching said boom to said body so that the counterweight center of gravity is always disposed between the boom pivotal attachment and the axis of rotation.

4,226,301
COLLAPSIBLE SAWHORSE

Horace J. McDaniel, 215 Bryan Blvd., Plantation, Fla. 33318, and James A. Young, 720 NW. 178th Terrace, Miami, Fla. 33169

Filed Jan. 29, 1979, Ser. No. 7,350
Int. Cl.[3] F16M 11/00
U.S. Cl. 182—155 2 Claims



1. A collapsible sawhorse, comprising:
a rigid beam, said beam having a first and second lateral passage near one end, and a third and fourth lateral passage near the opposite end;
a pair of rigid plates, each plate having a first area and a second area, said first and second areas defining planes,

said planes being at a predetermined angle relative to each other, said first area having a slot disposed adjacent one end, said slot being sized to receive the lateral width of said rigid beam, said slot being further defined by a pair of substantially perpendicular flanges upwardly disposed and parallel, spaced to encompass the lateral sides of said rigid beam, said flanges including first and second apertures for receiving fasteners and said apertures being spaced apart equal to the first and second and third and fourth lateral passages in said rigid beam, the first area including a portion beyond said slot, said portion for receiving said rigid beam, said beam being extended in length to overlap the nonslotted portion of the first area, the second area including first and second apertures for receiving a fastener and corresponding arcuate apertures; and first and second pairs of rigid legs, first and second fasteners connected between said legs and second area of said rigid plate, third and fourth fasteners connected in said arcuate slots whereby said legs may be pivoted from a first spread apart position to a second substantially parallel position by loosening said fasteners in said arcuate slots; and fifth and sixth removable fasteners disposed between said flanges of said first area, one of said fasteners acting as a pivot such that removal of one fastener in said flange will allow said plate to be rotated such that said legs are parallel to said beam.

4,226,302

SECTIONAL LADDER LOCK

John N. Roche, Greenville, Pa., assignor to R. D. Werner Co., Inc., Greenville, Pa.

Filed Nov. 30, 1978, Ser. No. 965,143
Int. Cl.[2] E06C *1/10*
U.S. Cl. 182—178 **16 Claims**

1. Apparatus for releasably locking a ladder section to another ladder section, said ladder sections being movable relative to each other, and

latch actuating means protruding from one of said ladder sections and being movable with said one ladder section; and

a latching mechanism mounted on the other of said ladder sections, said latching mechanism including:

a latching hook for securing said other ladder section to said one ladder section, said latching hook being movable between a locking position wherein a portion of said hook is disposed in the path of movement of said latch actuating means to releasably lock said ladder members together and a releasing position wherein said one ladder member is removable from said other ladder member; and

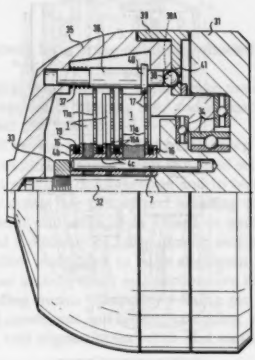
tripping means operable in response to the movement of said latching hook to the locking position to prevent movement of said hook from the locking position, and manually operable for enabling the movement of said locking means from the locking position to the releasing position.

4,226,303

HYDRAULICAL DAMPING ELEMENT, IN PARTICULAR FOR DAMPING OF THE SWIVEL MOVEMENT OF A MOVIE OR TELEVISION CAMERA WHICH IS SECURED ON A HEAD OF A TRIPOD

Georg Thoma, Mozartstr. 14, 8021 Sauerlach, Fed. Rep. of Germany

Filed Dec. 16, 1977, Ser. No. 861,410
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1976, 2657692
Int. Cl.[2] F16D *57/02*
U.S. Cl. 188—1 B **6 Claims**



1. A tripod head for a television or film camera including a rotatable receiving device for the camera, a shaft connected to the receiving device, a fixed stator including bearing means rotatably supporting said receiving device, and a hydraulic damping element interposed between rotatable device and stator,

the damping element comprising a self-contained independent unit incorporating two subunits, the first subunit being composed of alternating, abutting annular disk-shaped spacers and damping disks all having the same hole diameter with outer ones of said spacers forming the outer ends of said first subunit, the second subunit being composed of alternating, abutting annular disk-shaped damping disks and spacers all having the same outside diameter with outer ones of said damping disks forming the outer ends of said second subunit, the damping disks of the two subunits being interfingered with one another in a comb-like manner, the two outer damping disks of the second subunit being slidable in friction bearing relation on the outer spacers of the first subunit, and including a seal therebetween at the friction bearing interface, and damping fluid contained in the thus-sealed damping element;

means mounting the damping element as a unit on said head and including means rigidly fixing said first subunit for rotation with said shaft and locking means for locking said second subunit in a fixed position with respect to said stator during the rotary movement of said shaft, said rigidly fixing means including an elongate pin extending through eccentrically located axial openings in said spacers and damping disks of said first subunit and then into an eccentrically located axial hole in said rotatable device,

said locking means comprising teeth on one of said outer ones of said damping disks of said second subunit and means on said stator selectively interengageable therewith, said second subunit including eccentrically located axially extending means locking together said spacers and damping disks of said second subunit and free of connection to said stator means.

4,226,304

DISK BRAKE FOR VEHICLES, ESPECIALLY FOR MOTORCYCLES

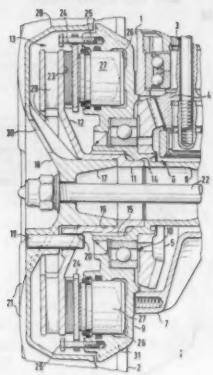
Klaus Erdmann, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 29, 1978, Ser. No. 964,636

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2753753

Int. Cl.[2] F16D *65/12*

U.S. Cl. 188—18 A **3 Claims**



1. A disk brake arrangement in a vehicle, comprising a wheel means having a wheel hub connected with wheel spokes, said wheel means being supported unilaterally at a wheel guide means, said wheel hub being operatively connected with a support hub rotatably supported at the wheel guide means as well as with a brake disk means, the brake disk means including an axially extending brake disk hub which is clamped in between the support hub and the wheel hub by way of a central connecting means, characterized in that said wheel hub has a central axially extending portion which is centered in a stepped through bore of the brake disk hub, said brake disk hub being non-rotatably connected with said wheel hub and on its outer circumferential surface being centered and connected in a non-rotatable manner in the support hub, whereby the suppot hub is located in the region of the connection of the brake disk hub and the wheel hub, and wherein said central connecting means clamping said brake disk hub between said support hub and said wheel hub is a central threaded bolt.

4,226,305

ROPE DESCENT CONTROL-BRAKE

Finn Frestad, Floyveien 4, N-4440 Flekkefjord, Norway

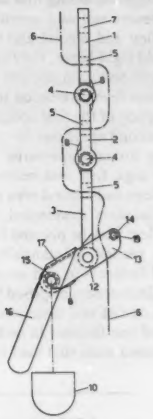
Filed Nov. 17, 1978, Ser. No. 961,490

Claims priority, application Norway, Nov. 29, 1977, 774003; Jun. 28, 1978, 782228

Int. Cl.[2] B65H *59/26*

U.S. Cl. 188—65.2 **5 Claims**

1. Rope descent control-brake which is movable along a rope and which locks firmly on to the rope when pulled, the rope descent control-brake comprising an upper part, a middle part, and a lower part, said upper part being hinged to said middle part by hinge-joint and said middle part being hinged to said lower part by a hinge-joint for swinging movement relative to each other about horizontal axes and each part having a hole through which the rope is passed, said holes being horizontal and perpendicular to the axes about which said parts are hinged when said parts are vertically aligned, and the



lower part having an anchorage point for a safety-harness, springs mounted on the hinge-joints between said parts in such a manner as to cause said parts to move into the vertically aligned position as soon as the parts are released following a movement along the rope and thus providing further assurance that the control-brake locks on to the rope quickly and safely.

4,226,306

APPARATUS FOR ACTUATING A BRAKING UNIT

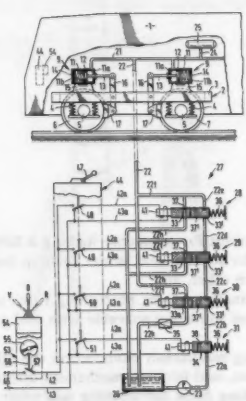
Arnold Schäfer, Kloten, Switzerland, assignor to Schweizerische Lokomotiv-und Maschinenfabrik, Winterthur, Switzerland

Filed Jan. 16, 1979, Ser. No. 3,902

Claims priority, application Switzerland, Jan. 24, 1978, 724/78

Int. Cl.[3] F16D *65/30*

U.S. Cl. 188—170 **13 Claims**



1. Apparatus for actuating at least one braking unit; said apparatus comprising

at least two braking control means for effecting a braking action in the braking unit;

at least two shut-off means for preventing a braking action in the braking unit, each shut-off means being coupled to a respective braking control means;

at least one lifting control means for re-setting the braking unit;

actuating lines connecting said braking control means in parallel to the braking unit and connecting said lifting control means and said shut-off means in series to the braking unit; and

positioning means for switching each of said braking control means and said lifting control means between a respective operating position and shut-off position; said operating position of each said braking control means corresponding to an actuation of the braking unit into a braking condition and said shut-off position of each said braking control means corresponding to a blocking of the braking of the braking unit, said operating position of each said shut-off means and said lifting control means corresponding to a release position permitting re-setting of the braking unit and said shut-off position of said shut-off means and said lifting control means corresponding to said operating position of each said braking control means.

4,226,307

APPARATUS FOR TAKING UP WEAR IN A BRAKE AND BRAKE UTILIZING THIS APPARATUS

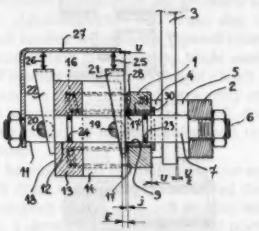
Henri Dorot, Wattignies, France, assignor to Verlinde, Societe Anonyme, Loos, France

Filed Dec. 1, 1978, Ser. No. 965,413

Claims priority, application France, Dec. 12, 1977, 77 38527

Int. Cl.³ F16D *55/224, 65/52;* H02P *3/04*

U.S. Cl. 188—196 V **10 Claims**



1. Automatic apparatus for compensating for wear in a brake with floating front and rear shoes acting on one side and on the other of a disc blocked in translation, comprising at least one guide fixed at one of its extremities to said rear shoe, said at least one guide being parallel to the axis of said disc, said front shoe, and a yoke, being slidably mounted on said at least one guide, means for preventing the escape of said yoke from said guide, means for distributing from one part and the other of the disc the value of the disengagement movement, means for controlling the attraction of said front shoe and said yoke, and, the spacing of said front shoe and said yoke, compensation for wear accruing by limitation of the movement of said front shoe and of said yoke with respect to said disc, being characterized in that it comprises two stops on said at least one guide and two wedges disposed in such a way that for each guide said front shoe and said yoke have their faces which are located away from said disc engaging one of said stops through one of said wedges, and means for urging said wedges to automatically engage more and more between said face and the corresponding one of said stops, whereby in accordance with wear, said wedges separate said yoke and said front shoe.

4,226,308

DISC BRAKE COVER

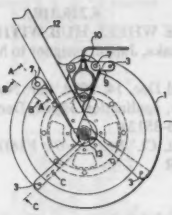
Yukinori Nishiyama, and Masachika Yamamoto, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 30, 1979, Ser. No. 34,701

Claims priority, application Japan, Apr. 28, 1978, 53-57066[U]

Int. Cl.³ F16D *65/00*

U.S. Cl. 188—218 A **7 Claims**



1. A disc cover for a brake on a two-wheeled vehicle comprising:

a vehicle structural support, a disc brake assembly coupled to said support, a braking disc and a central axis about which said disc is mounted,

a cover unit having a plurality of overlapping sections, each section coupled to said central axis, said sections adapted to nest in a closed configuration and to be spread to substantially cover one side of said breaking disc,

means to hold said sections in closed or spread configurations, and a plurality of holes in each section, one hole in each section positioned to be in alignment with a hole in each other section when said sections are nested, wherein said holding means comprises a fixing pin positioned inside said cover unit and having extending rods projecting through said aligned holes when said sections are nested.

4,226,309

SPEED RESPONSIVE ROTARY COUPLING

Russel E. Siliberschlag, Glen Ellyn, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Apr. 26, 1978, Ser. No. 900,385

Int. Cl.² F16D *43/14*

U.S. Cl. 192—3.31 **9 Claims**

1. A speed responsive rotary coupling including a first rotatable member having a circumferentially extending drive surface defined therein, a second rotatable member, said second rotatable member including guide means, and a centrifugally actuated friction shoe movably mounted in said guide means for radial movement toward and from engagement with said drive surface, wherein the improvement comprises auxiliary loading means operatively connected to said friction shoe, said auxiliary loading means including a follower member movably mounted on said second rotatable member, said follower member being movable in a radially outward direction under the influence of centrifugal force responsive to rotation of said second rotatable member, a yieldable load spring engaged between said friction shoe and said follower member, said load spring being subjected to flexure in accordance with radially

outward movement of said follower member, whereby said load spring imposes a force on said shoe proportional to flexure of said spring by said follower member, and further including stop means operative to limit outward movement of said follower member whereby after initial shoe contact with said drive surface, the engaging force of said shoe will have a first relationship to rotational speed of said second rotatable member, and after the follower member contacts the stop means, a second relationship between the shoe engaging force and rotational speed of said second rotatable member is developed.

4,226,310

BICYCLE FREE WHEEL HUB WITH COASTER BRAKE

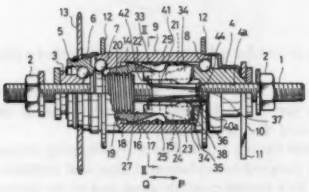
Nobuo Ozaki, Osaka, Japan, assignor to Maeda Industries, Ltd., Osaka, Japan

Filed Dec. 14, 1978, Ser. No. 969,271

Claims priority, application Japan, Dec. 16, 1977, 52-152074; Mar. 27, 1978, 53-35124

Int. Cl.³ B62L *5/02*; F16D *41/28*

U.S. Cl. 192—6 R **12 Claims**



1. A bicycle free wheel hub with coaster brake comprising an anchor member fixedly mounted to one end of a stationary axle, a driving member journalled on the other end of said axle, a hub shell journalled on said anchor member and said driving member, a clutch cone screwed on an externally threaded and inwardly extending axial extension of said driving member so as to move axially inward and backward by threads along with directions of rotation of said driving member, a plurality of brake shoes arranged so as to be forcibly expanded radially when said clutch cone moves axially inward, said clutch cone having a clutch surface at its outward end and a brake-shoe expanding surface at its inward end, said clutch cone being provided with an axial hole of which inward end is formed with a non-smooth surface, and a plurality of slits formed in an inward portion of said anchor member within which a plurality of detent pieces are respectively disposed with each end extended into said axial hole, said detent pieces being arranged so as to restrict said brake shoes from circumferential motion and so as to be elastically urged radially by means of at least one spring member for frictionally engaging said each end with said non-smooth surface of said clutch cone.

4,226,311

ROTARY DRIVE DISC BRAKE FOR DRAWWORKS

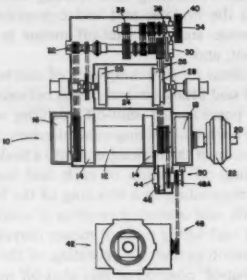
Earl R. Johnson, and Lesley G. Watkins, both of Tulsa, Okla., assignors to Loffland Brothers Company, Tulsa, Okla.

Division of Ser. No. 795,106, May 9, 1977, Pat. No. 4,144,953. This application Nov. 6, 1978, Ser. No. 958,107

Int. Cl.² F16D *57/10*; B60K *41/24*; B60T *7/12*

U.S. Cl. 192—8 R **5 Claims**

1. In combination with a drawworks operating a drill string during a well bore drilling operation, braking means comprising friction disc means connected wtih a rotary member of the drawworks for rotation simultaneously therewith, caliper brake means disposed in the proximity of the friction disc means for receiving the outer periphery of said disc means between the braking elements thereof, and means operably connected between the caliper brake means and the drill string for activation of said caliper brake means when reverse torque occurs in the drill string during the well bore drilling operation, and wherein said last-mentioned means comprises control valve means operable for supplying fluid pressure to the drawworks and caliper brake means for alternate actuation thereof, brake actuator means interposed between said control valve and said claiper brake means for selective activation by said



control valve for actuation of said caliper brake means, and pilot valve means interposed between said control valve and said drawworks for isolating said drawworks from said drill string upon activation of said caliper brake means.

4,226,312

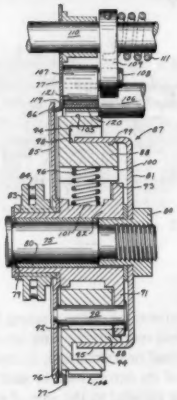
CLUTCH AND BRAKE MECHANISM

Hugh A. Zindler, Rte. 3, Box 264, Plasant Valley La., Watertown, Wis. 53094

Filed Jun. 23, 1977, Ser. No. 809,207

Int. Cl.² F16D *67/02*

U.S. Cl. 192—14 **18 Claims**



1. In a brake-clutch mechanism between rotatable drive and driven members, a housing having an open face, a seal plate extending over the open face of said housing and having a circular opening, a drum carried on said drive member and having at least the circumferential flange thereof disposed in the housing, clutch shoes carried on said driven member and being movable relative thereto into and out of clutching engagement with the drum, means for effecting movement of said shoes into engagement with the drum to drivingly clutch the drive and driven members together, a brake band for effecting movement of said shoes out of engagement with the drum and to stop rotation of the driven member without interrupting the rotation of the drive member, said clutch shoes, brake band and means for effecting movement of said shoes into engagement with the drum all being disposed in said housing, and a slinger plate carried by one of said rotatable members, said slinger

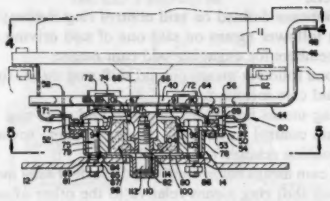
plate extending radially beyond the opening in said seal plate and in close proximity with the edge of the opening to provide a rotary closure for the housing to substantially preclude entry of deleterious matter into said housing.

4,226,313

CLUTCH-BRAKE SYSTEM FOR ROTARY MOWER

Robert D. Meldahl, Granville, and Robert J. Borel, Columbus, both of Ohio, assignors to J. A. Masterson & Co., Granville, Ohio

Filed Jun. 20, 1977, Ser. No. 808,336
Int. Cl.[2] F16D *67/02*; A01D *69/08*
U.S. Cl. 192—18 R **12 Claims**



1. A brake clutch mechanism for a rotary power mower having a cutting blade member comprising:

a clutch assembly including a brake disc;

a pivotable control lever for operating said clutch assembly and brake disc;

said clutch assembly having a cylindrical drum and tapered cone of frictional material forming a cone clutch and operating in association with a mating tapered metal clutch cone cup fixed to said brake disc;

said brake disc including means which simultaneously transfer power from the clutch assembly to the cutting blade member, wherein actuation of the pivotable control lever causes the clutch assembly and brake disc to gradually engage, and further wherein the tapered cone produces a gradual acceleration in the cutting blade member;

a plurality of counterweighted flyweight clutch shoes pivotally mounted on said brake disc outwardly of said clutch drum and adapted to engage the clutch drum, thereby transmitting power to the brake disc and to the cutting blade member;

a drive shaft having an end extending into one end portion of said clutch drum and drivingly connected thereto by key means, a support washer adjacent another end portion of said drum, a sleeve within the other end portion between said washer and the end of said shaft, a pilot screw extending through said washer and sleeve and threadedly connected to the end of said shaft whereby when said screw is tightened, the washer and sleeve are compressed without compressing any part of said drum, thereby relieving the drum of compression stresses and relieving the screw of torsional forces transmitted by said drum so that said screw is not loosened.

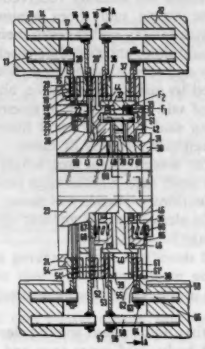
4,226,314

COMBINED CLUTCH AND DOUBLE-ACTION BRAKING DEVICE

Karl W. Mombre, Wermelskirchen, Fed. Rep. of Germany, assignor to Ortlinhaus-Werke GmbH, Wermelskirchen, Fed. Rep. of Germany

Filed Mar. 8, 1978, Ser. No. 885,018
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1977, 2711505
Int. Cl.[2] F16D *67/04*
U.S. Cl. 192—18 A **8 Claims**

1. A combined clutch and double-braking action device for use in machines having a rotational driving shaft and a separate driven shaft, said device comprising at least one coupling disk secured to said driving shaft; two braking disks fixedly arranged in a spaced relation with each other on a stationary holding member; a clutch support and at least one supporting disk each secured to said driven shaft, said one supporting disk defining a peripheral part and an intermediate part, said peripheral part projecting between said braking disks, said intermediate part including two opposite pressure spaces having a common partition therebetween and each cooperating with an axially movable pressure disk for sealingly closing the assigned space; said pressure spaces and said pressure disks delimiting substantially equal surfaces; spring means for resiliently urging each pressure disk against a corresponding braking disk; and means for applying pressure fluid into said spaces to disengage said pressure disks from said braking disks and for urging at least one of said pressure disks against said coupling disk.

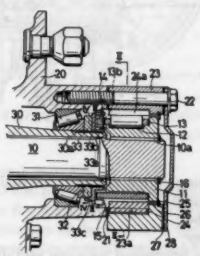


4,226,315

FREE WHEEL HUB MECHANISM

Tooru Kagata, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Jul. 26, 1978, Ser. No. 928,265
Claims priority, application Japan, Jul. 27, 1977, 52/100980
Int. Cl.[2] F16D *3/34*; B62B *27/00*
U.S. Cl. 192—38 **5 Claims**



1. A free wheel hub mechanism comprising:

a body secured to a wheel,

an inner race secured to an axle shaft and rotatable therewith, said inner race having at outer periphery thereof a plurality of cam surfaces,

a cage arranged between said body and said inner race and having a plurality of openings in which rollers are positioned,

said rollers being outwardly urged by said cam surfaces so as to be squeezed against said body when said inner race rotates with said shaft together as one body, thereby

causing said wheel to rotate together with said inner race, and

means for restraining rotation of said cage, said restraining means including a plurality of shoes between which a plurality of cantilever projections provided on an innermost portion of said cage are arranged, a shoe receiving member secured to a non-rotatable spindle sleeve which houses said shaft therein and having a receiving surface on which said shoes are slidably received, and an annular spring means urging said shoes against said receiving surface and maintaining said shoes in their proper position, whereby after said shoes and said shoe receiving member are assembled by said spring means, said shoe receiving member is secured to said spindle sleeve, and thereafter said projections of said cage which is assembled within said body between said body and said inner race, are positioned between said plurality of shoes.

5. A method for assembling a free wheel hub mechanism having a body, an inner race, a roller cage including a plurality of cantilever projections, a plurality of shoes, a shoe receiving member, a spindle sleeve and an annular spring means, said method comprising:

assembling said shoes and shoe receiving member and said annular spring means into a first unit with said annular spring means urging said shoes against said shoe receiving member;

mounting said first unit on said spindle sleeve;

assembling said body, said inner race and said roller cage into a second unit; and

positioning said second unit adjacent said first unit with said cantilever projections located between said shoes.

4,226,316
TORQUE LIMITING CLUTCH ASSEMBLY WITH FREEWHEELING ACTION

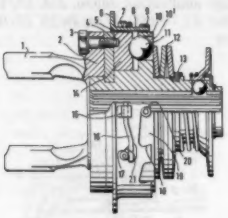
Hubert Geisthoff, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Jun. 27, 1978, Ser. No. 919,701

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1977, 2729545

Int. Cl.[2] F16D *43/20*

U.S. Cl. 192—56 R **19 Claims**



1. An overrunning clutch assembly for limiting torque transmission therethrough comprising:

a driving member;

a driven member;

shift ring means interposed between said driving and driven member to be axially moveable relative thereto between a driving position, where said shift ring means operates to transmit torque from said driving member to said driven member, and a freewheeling position whereby torque transmission between said driven and said driving member is disengaged, said shift ring means moving to said freewheeling position when a predetermined level of torque transmission through said clutch assembly is exceeded;

track means defining in said shift ring means circumferentially extending indentations;

roller means operatively mounted on one of said driving and driven members in position to engage said track means;

said track means including first portions thereof adapted to be engaged by said roller means when said shift ring means is in said driving position to effect transmission of torque between said shift ring means and said one of said driving and driven members, and second portions thereof enabling freewheeling action between said shift ring means and said one of said driving and driven members whereby said shift ring means is placed in said freewheeling position;

said track means being configured to effect said freewheeling action when torque applied between said one of said driving and driven members and said shift ring means exceeds a predetermined level;

control ring means operatively interposed between said shift ring means and said one of said driving and driven members;

cam means defined on said control ring means;

first follower means on said one of said driving and driven members for engaging said cam means;

second follower means on said shift ring means for engaging said cam means; and

spring means interposed between said shift ring means and said control ring means for urging them toward a given position relative to each other;

said cam means being configured to effect axial movement of said shift ring means relative to the other of said driving and driven members to cause disengagement therebetween as a result of interengagement between said second follower means and said cam means, said interengagement occurring by virtue of engagement of said first follower means with said cam means effected when freewheeling engagement between said roller means and said track means occurs.

4,226,317
BICYCLE HUB

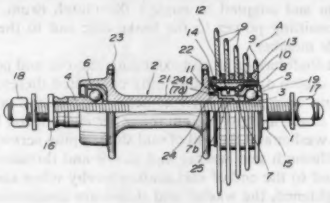
Masashi Nagano, and Koya Sonoi, both of Sakai, Japan, assignors to Shimano Industrial Company, Limited, Osaka, Japan

Filed Sep. 19, 1978, Ser. No. 943,709

Claims priority, application Japan, Sep. 29, 1977, 52/131338[U]

Int. Cl.[2] F16D *41/00*; F16H *11/08*

U.S. Cl. 192—64 **4 Claims**



1. In a bicycle hub having a hub shaft, a hub body comprising: a hub shell and a pair of hub flanges provided at both axial ends of said hub shell, a pair of first and second bearings supporting said hub body rotatably to said hub shaft, and a drive unit incorporated with said hub body for driving said hub body, said drive unit having a frustum-like cone, a cylindrical driving member, at least one sprocket, a pair of bearings for supporting said driving member rotatably to said cone, and a unidirectional rotary transmission inserted between said driving member and said cone, wherein the improvement comprises said hub body having at its one axial end supported by said first bearing a tubular mount extending axially outward from said hub body, said tubular mount having at its outer periphery an external spline extending axially from the same, said cone at said drive unit being provided at the inner periphery of one axial end thereof with an internal spline to be fit with said external spline at said mount, said cone having at its axially intermediate portion the inner periphery in continuation with

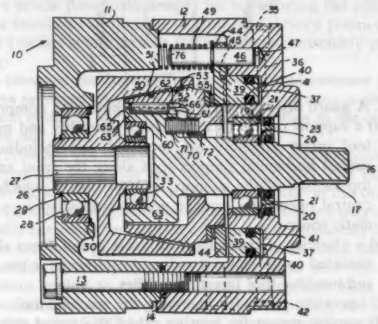
said internal spline, said inner periphery having an inner diameter fit to the outer periphery of said tubular extension, at least one of said bearings being screwed to said hub shaft, whereby said drive unit is detachably connected to said hub body, and said drive unit including said cone is spline fit to said tubular mount at the hub body and supported by said tubular extension thereof.

4,226,318

HYDRAULICALLY ACTUATED CONE CLUTCH

George H. Morgan, South Bend, Ind., assignor to Lambert Brake Corporation, St. Joseph, Mich.

Filed Oct. 10, 1978, Ser. No. 950,065
Int. Cl.[3] F16D *25/08*
U.S. Cl. 192—85 CA **13 Claims**



1. An hydraulic clutch comprising, in combination, an input shaft, a male cone member, interconnector means mounting said male cone member on the input shaft for rotation therewith and for limited axial sliding movement therealong, a female cone member having an open end for receiving the input shaft and male cone member, the female cone member having a conically-shaped, annular wall surrounding the male cone member, and also including a portion shaped to form an output shaft, fluid pressure means including at least one slidable piston for applying sufficient axial pressure to the male cone member to urge the male cone member into engagement with the female cone member, and bearing means for transferring the piston motion to the rotatable male cone member, thereby drivingly coupling the input and output shafts, and means for separating the cone members when the fluid pressure is released.

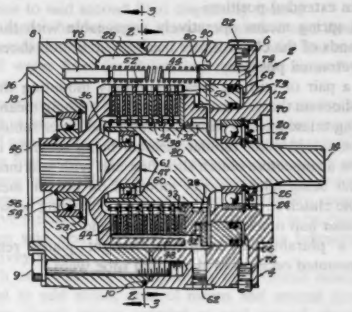
4,226,319

HYDRAULIC CLUTCH

John W. Euler, and Arthur W. Pear, both of Benton Harbor, Mich., assignors to Lambert Brake Corporation, St. Joseph, Mich.

Filed Nov. 6, 1978, Ser. No. 957,973
Int. Cl.[3] F16D *25/08*
U.S. Cl. 192—85 CA **8 Claims**

1. An hydraulic clutch comprising an input shaft, driving discs radiating outwardly from said shaft, and means mounting said driving discs on said input shaft for rotation therewith and for limited axial sliding movement therealong; a cup having an open end for receiving said input shaft, said cup having an annular wall surrounding a plurality of said driving discs, and cup also including an end opposite to said open end and shaped to form an output shaft coaxial with said input shaft, driven discs radiating inwardly from said annular walls and being disposed in alternating parallel relation with the driving discs, and means mounting said driven discs on said annular wall for rotation therewith and for limited axial sliding movement therealong; piston means for applying sufficient axial pressure to said driving and driven discs to couple them and thereby drivingly couple the input and output shafts, and means forming a chamber for containing hydraulic fluid and in which said annular wall and said driving and driven discs are located, a first pin, and thrust plate means carrying said first pin for axial,



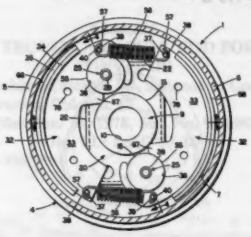
non-rotational motion and interposed between said driving and driven discs and said piston means, said first pin having an effective length sufficient to engage a stop member and thus limit the axial pressure imposed by the piston means through the thrust plate means on the driving and driven discs.

4,226,320

CENTRIFUGAL CLUTCH CONSTRUCTION

Richard C. St. John, North Canton, Ohio, assignor to Aspro, Inc., Canton, Ohio

Filed May 22, 1978, Ser. No. 907,925
Int. Cl.[2] F16D *43/14*
U.S. Cl. 192—105 CD **5 Claims**



1. An improved centrifugal clutch construction adapted to be mounted on a drive shaft, said clutch construction including:

(a) a driven clutch member;

(b) a cylindrical hub having an outer annular shoulder and an internal bore for telescopically receiving the drive shaft therein for rotation of the hub with the drive shaft;

(c) bearing means telescopically mounted on the hub and in abutting engagement with the annular shoulder for rotatably mounting the driven clutch member thereon;

(d) drive flange means mounted in a fixed position on the hub in abutting relationship with the annular shoulder opposite of the bearing means for rotation with the hub;

(e) a pair of pin means mounted on the drive flange means diametrically opposite of each other and extending in an axial direction from the flange means in a cantilever manner;

(f) a pair of arcuate-shaped clutch shoes each having first and second ends pivotally mounted on the drive flange means in end-to-end relationship with respect to each other and movable outwardly towards and against the driven clutch member under the influence of centrifugal

force from retracted to extended position, said clutch shoes each having a shoe web and an outer shoe table;

(g) the clutch shoes each having a frictional coupling surface provided on the shoe table and adapted to drivingly engage the driven clutch member when the clutch shoes are in extended position;

(h) spring means operatively engageable with the second ends of the clutch shoes biasing said clutch shoes toward retracted position;

(i) a pair of bushing means pivotally mounting the clutch shoes on the pin means, each of said bushing means including telescopically mounted inner and outer tubular members, said outer tubular member being securely mounted on a respective clutch shoe first end with said inner member being telescopically mounted on the pin means, and the clutch shoe pivotal movement occurring between said inner and outer tubular members; and

(j) a plurality of individual weight plates removably mounted on each of the clutch shoe webs.

4,226,321

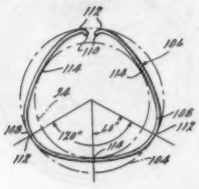
SELF-ALIGNING CLUTCH BEARING ASSEMBLY

Eli M. Ladin, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Continuation-in-part of Ser. No. 667,077, Mar. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 593,627, Jul. 7, 1975, Pat. No. 4,033,440, which is a division of Ser. No. 427,486, Dec. 26, 1973, Pat. No. 3,931,875. This application May 30, 1978, Ser. No. 910,386

Int. Cl.[2] F16D *13/60*

U.S. Cl. 192—110 B **9 Claims**



1. A clutch release bearing assembly comprising a first race member defining a first annular raceway and including means defining an annular engaging surface for contacting external clutch release members, a second race member defining a second annular raceway and including means for engaging actuating means for effecting axial shifting movement of said bearing assembly, a plurality of antifriction bearing elements interposed between said first and said second race member and riding in the annular raceways thereof, said second race member formed with a bore extending axially therethrough for receiving a generally cylindrical support member in a radially spaced clearance relationship defining an annular clearance space therebetween, said bearing assembly adapted to be mounted on the support member and a resilient polylobate spring disposed in encircling relationship within said annular clearance space between said bore and the periphery of the support member for supporting said bearing assembly and said annular engaging surface on the support member in yieldable spaced relationship to permit limited deflection of said engaging surface in a plane perpendicular to and in planes angularly tilted with respect to the axis of said support member.

4,226,322

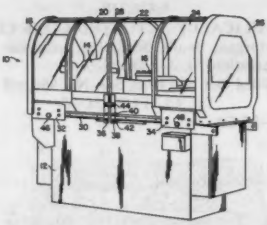
MACHINE TOOL GUARD DOOR ASSEMBLY

John M. Peris, Horseheads, N.Y., assignor to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Jul. 17, 1978, Ser. No. 925,397

Int. Cl.[3] F16P *3/08*

U.S. Cl. 192—135 **8 Claims**



1. A guard door assembly for a machine tool, comprising-

(a) a support on which a headstock assembly and machine tool turret assembly are mounted and including two spaced horizontal support rods along the front and rear top surface of the support, at least one of which has a central pneumatic passage and is connected to a pneumatic source

(b) a plurality of transparent movable guard doors slidably mounted on the support rods and enclosing the headstock and machine tool turret assemblies

(c) operating means for operating the machine tool

(d) sensing means for sensing when the guard doors are opened

(e) deactivating means associated with the sensing means for automatically deactivating the operating means when the guard doors are opened, and

(f) the sensing means having an element which pneumatically co-acts with one of the support rods and which is both inaccessible to the operator and gives no outward appearance of its function.

4,226,323

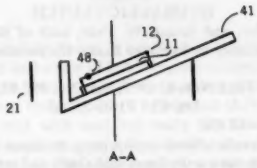
PRECISION COIN ANALYZER FOR NUMISMATIC APPLICATION

Joseph L. Dautremont, 28 Taxco Ct., Simi Valley, Calif. 93065

Continuation-in-part of Ser. No. 707,891, Jul. 22, 1976, Pat. No. 4,128,158. This application Sep. 8, 1978, Ser. No. 940,749

Int. Cl.[2] G07F *3/02*

U.S. Cl. 194—100 A **11 Claims**

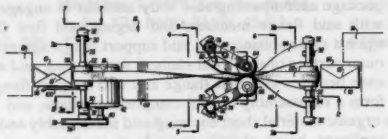


1. A means of positioning coins within the field of a substantially cylindrical inductor comprising three substantially plane restraining surfaces and a right circular cylinder having first and second bases; the first and second of said surfaces being portions of planes which intersect in a line parallel to the axis of said cylindrical inductor, the third surface being a portion of a plane which intersects the first base of said cylindrical inductor and proceeding in the direction of the second base, forms a vertex with said first and second planes so that a coin moving down the ramp formed by the third surface is restrained in said vertex.

4,226,324
ARTICLE TURNOVER ASSEMBLY

Lester H. Stocker, Phillipsburg, N.J., assignor to Bell & Howell Company, Phillipsburg, N.J.

Filed May 8, 1978, Ser. No. 904,120
Int. Cl.[2] B65G 47/24
U.S. Cl. 198—405 7 Claims



1. An article turnover assembly for transporting flat articles such as envelopes or documents from an entrance position to an exit position while turning the articles, said assembly comprising:

two crowned entrance pulleys, a first of said entrance pulleys mounted above the second at said entrance position, each entrance pulley having its crown offset to the opposite side as the other;

two crowned exit pulleys, a first of said exit pulleys mounted above the second at said exit position, each exit pulley having its crown offset to the opposite side as the other;

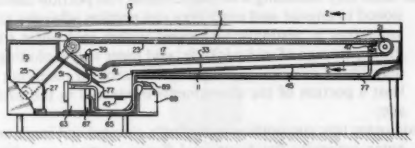
two flexible endless belts for transporting articles longitudinally between them as said belts move contiguously from the entrance position to the exit position, said flexible endless belts respectively extending from said first entrance pulley to said second exit pulley and from said second entrance pulley to said first exit pulley; said belts being twisted 180° between said entrance and exit pulleys and each having at least one span contiguous to a corresponding span of the other, said spans traveling from said entrance pulleys to said exit pulleys; and,

a means for driving at least one of said pulleys so that the contiguous belt spans move together in the same direction from said entrance position to said exit position at the same rate of speed.

4,226,325
CONVEYOR LUBRICATING AND WASHING APPARATUS

Edward B. Vandas, St. Louis, Mo., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Mar. 15, 1979, Ser. No. 20,674
Int. Cl.[3] B65G 47/22
U.S. Cl. 198—493 8 Claims



1. In a conveyor apparatus having a conveyor belt and a motor selectively enabled by motor control means coupled to input power lines for driving said belt along a slider means and further having first lubricating fluid dispensing means for directing a lubricating mixture of detergent and water at said belt for reducing friction between said conveyor belt and said slider means and second washing fluid dispensing means for directing a washing mixture of detergent and water at said belt for cleansing said belt, each of said fluid dispensing means being coupled to water supply means by respective first and second water lines and to a detergent reservoir, control apparatus comprising:

first electrically controlled valve means interposed in said first water line for controlling the flow of water through said first water line from said water supply means to said first fluid dispensing means;

second electrically controlled valve means interposed in said second water line for controlling the flow of water through said second water line from said water supply means to said second fluid dispensing means;

pump means having input means coupled to said detergent reservoir and output means coupled to said first and second water lines for delivering detergent to said water lines;

master switch means coupled to said motor control means and to said first electrically controlled valve means and said pump means, said master switch means being actuable to a first switch position to energize said motor control means and enable said conveyor motor and to enable said pump means and open said first electrically controlled valve means to allow water and detergent to be dispensed from said first fluid dispensing means to lubricate said conveyor belt;

switch means having first normally open circuit means coupled to said motor control means and second normally open circuit means coupled to said second electrically controlled valve means and said pump means; and

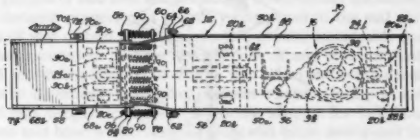
wash timer means coupled to said master switch means and said switch means for closing said first and second normally open circuits of said switch means for a predetermined time interval after said master switch means is switched form the first switch position to a second switch position,

said switch means opening said second electrically controlled valve means and energizing said pump means during said predetermined time interval responsive to said wash timer means to allow water and detergent to be dispensed from said second fluid dispensing means to wash said conveyor belt and maintaining said motor control means energized to enable said motor to move said conveyor belt past said second fluid dispensing means.

4,226,326
CONVEYOR TROUGH AND PULL ROD FOR A SHAKER CONVEYOR

Charles L. Watkins, Chicago, Ill., assignor to Goodman Equipment Corporation, Chicago, Ill.

Filed Jun. 26, 1978, Ser. No. 918,965
Int. Cl.[3] B65G 27/06
U.S. Cl. 198—758 5 Claims



1. In a shaker conveyor, the combination comprising a conveyor trough defining a discharge end, means supporting said conveyor trough for longitudinal reciprocating movement, and drive means including a drive motor and a pull rod interconnecting said drive motor to said conveyor trough so as to effect reciprocating movement of said trough upon actuation of said drive motor to advance discreet particles therealong in the direction of said discharge end, said drive motor and pull rod being operative to effect movement of said conveyor trough in the direction of said discharge end at a first velocity during which said pull rod is in axial compression followed by reverse movement of said trough at a substantially increased velocity during which said pull rod is in axial tension,

said conveyor trough having a first trough section defining forward and rearward ends and a second trough section substantially axially aligned with said first trough section

and defining said discharge end and having a receiving end disposed adjacent said forward end of said first trough sections so as to receive particles therefrom,

resilient means interconnecting said first and second trough sections in a manner to facilitate both pivotal movement of said second trough section from its said axially aligned relation with said first trough section and longitudinal telescoping movement relative to said first trough section when said discharge end of said second trough section is subjected to a predetermined impact force,

said pull rod having first and second axially aligned sections adapted for mutually supporting telescoping relation, and a pawl carried by one of said pull rod sections for releasable interengagement with the other of said rod sections so as to normally maintain said first and second rod sections in predetermined relatively fixed axial relation, said pawl and said other of said rod sections being cooperative to prevent release of said pawl and thereby prevent elongation of said pull rod during movement of said trough in said reverse direction at said increased velocity with said pull rod in axial tension, said pawl being adapted for disengagement from said other of said rod sections to facilitate axial telescoping of said first and second rod sections when subjected to a predetermined axial force therebetween in a direction tending to shorten the overall length of the pull rod.

4,226,327

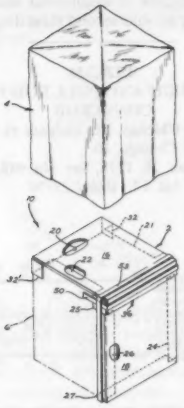
COMPOSITE PACKAGE

James L. Ballard, Tyler, Tex., assignor to General Electric Company, Louisville, Ky.

Continuation-in-part of Ser. No. 907,527, May 19, 1978, abandoned. This application Mar. 7, 1979, Ser. No. 18,001

Int. Cl.³ B65D *15/00, 65/10, 85/30*

U.S. Cl. 206—320 **2 Claims**



1. A composite package for an appliance comprising:

a one-piece body member including a top element positioned on the upper surface of the appliance and a front element positioned against one side wall of the appliance, each of said elements having one edge disposed to intersect with each other, with the elements extending in a substantially perpendicular configuration therefrom;

at least two sections are arranged between the elements intermediate the one edge thereof, said two sections being folded to extend from said intersection and reversely bent to provide a support flange integral with said elements being juxtapositioned relative to the outer surface of said front element;

a first flange member formed along a second edge portion of said top element being positioned against another side wall of said appliance opposite said one wall;

a second flange member formed along the bottom edge of said front member being arranged under the bottom wall of said appliance adjacent the front wall thereof so as to position said appliance between said top element and said second flange.

holding means arranged substantially horizontal on said package encompassing said body member in engagement with said flange members and urging said first flange against said appliance and said support flange against said outer surface of said front element for securing said appliance between said first flange and said support flange to form a subassembly of said composite package; and

an organic material sheet encasing said subassembly and said appliance being shrunk thereabout to form a shrink-wrapped composite package to secure said appliance between said top element and said second flange whereby said composite package is lifted through said support flange.

4,226,328

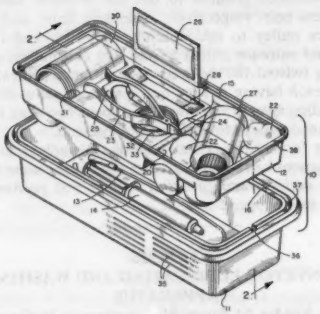
CATHETERIZATION PACKAGE

David V. Beddow, Lake Villa, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 9, 1979, Ser. No. 28,516

Int. Cl.³ B65D *81/24*

U.S. Cl. 206—364 **2 Claims**



1. A disposable catheterization package of the type containing components for a catheterization procedure, comprising:

an outer tray including side walls and a circumferential rim portion;

an inner tray including a circumferential rim portion dimensioned to engage said outer tray rim portion whereby said inner tray is nestingly suspended within said outer tray during storage of said package, said inner tray including a plurality of recesses on the surface thereof for receiving at least a portion of the components contained in the package;

said outer tray rim portion including a channel and inner and outer generally flat horizontal flange portions on either side of said channel;

said inner tray rim portion including a flat horizontal flange portion and a lip portion upstanding therefrom;

said inner flange portion of said outer tray rim and said flange portion of said inner tray rim being disposed for engaging in an abutting relationship when said inner tray is nested within said outer tray;

a notch-like recess along said inner flange portion of said outer tray rim for receiving in supporting relationship a portion of a catheter used in the catheterization procedure;

said lip portion of said inner tray rim being receivable within said channel of said outer tray rim when said inner tray is

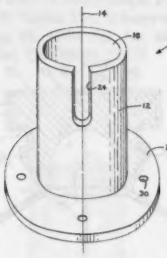
inverted, to provide a closed spill-resistant container between said tray portions for liquid collected during the catheterization procedure.

4,226,329

SANDING DISC CONTAINER

David Knight, 1263 S. 9th St., South Plainfield, N.J. 07080

Filed Jun. 7, 1979, Ser. No. 46,464
Int. Cl.[3] B65D *83/08, 85/62*
U.S. Cl. 206—372 4 Claims



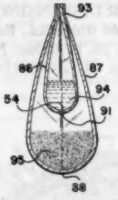
1. Container means for holding abrasive discs comprising:
a cylindrical member, said cylindrical member having a generally cylindrical outer wall, a first end opening and a second end opening;
a base member substantially closing said second opening in said cylindrical member;
slot means formed in said cylindrical wall, said slot means being formed in said wall to extend longitudinally from said first opening end through a portion of the length of said cylindrical member; and
a throughbore formed in said base member to permit access to the interior of said cylindrical member from and through the base member.

4,226,330

RUPTURE LINES IN FLEXIBLE PACKAGES

Robert W. Butler, 912 N. Colorado, Ulysses, Kans. 67880

Continuation of Ser. No. 578,132, May 16, 1975, abandoned.
This application Nov. 1, 1976, Ser. No. 738,164
Int. Cl.[3] B65D *33/36, 77/30, 25/08*
U.S. Cl. 206—620 4 Claims



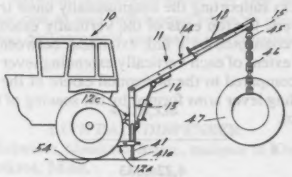
1. A container comprising:
(a) a pressure rupturable sealed bag containing material and constructed of a flexible thermoplastic sheet film wall having an upper surface and a lower surface, said bag having a heat sealed side;
(b) a rupture line extending a substantial distance along an integral extent of said sheet film wall and to said heat sealed side, said rupture line being characterized as an elongated groove having contoured lateral surfaces smoothly blending into said upper surface and into a web portion integral with said sheet film wall, said web portion having a cross-sectional thickness substantially reduced and weakened in tensile strength from that of the non-groove portions of said sheet film wall and protruding outwardly from said lower surface, said web portion providing a resistance against rupture less than the non-groove portions of said sheet film wall,
(c) whereby application of a predetermined internal pressure to said container will cause the container to rupture along said rupture line for release of the material therein.

4,226,331

HYDRAULICALLY ACTUATED HOIST FOR TRACTORS HAVING A CONVENTIONAL THREE POINT HITCH

Duane I. Dumond, 2309 Parmenter Rd., Corunna, Mich. 48817

Filed Aug. 8, 1977, Ser. No. 822,536
Int. Cl.[2] B66C *23/06*
U.S. Cl. 212—258 4 Claims



1. A hydraulically actuated hoist adapted for mounting on a farm tractor having a three point hitch, said hoist comprising, in combination, a base of generally inverted T-shaped configuration and including a horizontally extending portion and a vertically extending portion, strut means extending diagonally between said horizontally extending portion and said vertically extending portion of said base, a telescopic boom including a first box beam section having one end portion thereof pivotally connected to said vertically extending portion of said base, a second box beam section telescopically disposed within said first box beam section and having means fixedly mounted at one end thereof for attaching a load thereto, means for locking said first and second box beam sections in any one of a plurality of selected positions relative to each other, a hydraulic piston and cylinder unit having one end portion thereof pivotally connected to said base and the other end portion thereof pivotally connected to said boom, said piston and cylinder unit being operable to raise and lower said boom, a pair of vertically extending support legs fixed to said horizontally extending portion of said base and projecting downwardly therefrom, an elongate support post pivotally connected to the end portion of said second box beam section, ground engageable pad means secured to the free end portions of said legs and post, said post being adapted to overlie said boom and being pivotable to a vertically extending position whereby said post and said legs cooperate to form a tripodal support for said hoist when said hoist is disconnected from said hitch, and means for releasably connecting said base to said three point hitch.

4,226,332

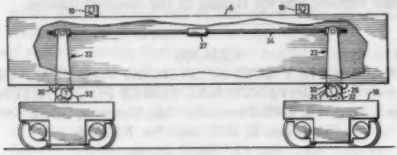
EQUALIZATION SYSTEM FOR OVERHEAD CRANES

Felim P. McCaffrey, Toronto, Canada, assignor to Hatch Associates Ltd., Toronto, Canada

Continuation of Ser. No. 921,451, Jul. 3, 1078, abandoned. This application Nov. 30, 1979, Ser. No. 98,881
Int. Cl.[3] B66C *9/12*
U.S. Cl. 212—218 3 Claims

1. An overhead crane comprising a rigid generally rectangular bridge frame, a truck beneath each corner of the frame for supporting the latter on parallel rails of a main runway for longitudinal movement, a trolley carrying hoisting machinery and movable laterally of the rectangular frame, oppositely acting levers forming the connections between the trucks on

one side only of the frame and the frame itself, and a link interconnecting the levers independently of the frame to equalize the loads on the trucks so connected, the levers each having a generally vertically extending lever arm and horizontally spaced longitudinally inner and outer trunnions forming a second longitudinally extending lever arm at the base of said vertically extending lever arm, the bridge frame being supported by the longitudinally outer trunnions of the two levers, and the trucks supporting the longitudinally inner trunnions of the two levers, the top ends of the vertically extending lever arms being connected by a link extending between the arms, the vertical extent of each vertically extending lever arm being very large compared to the horizontal extent of the longitudinally extending lever arms formed by the spacing of the axes of the trunnions.



4,226,333

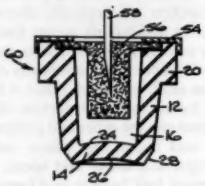
CANNULA PIERCEABLE SELF-SEALING CLOSURE

Edward P. Percarpio, North Haledon, N.J., assignor to Becton, Dickinson and Company, Rutherford, N.J.

Division of Ser. No. 880,474, Feb. 23, 1978, Pat. No. 4,136,794, which is a division of Ser. No. 729,643, Oct. 5, 1976, Pat. No. 4,111,326, which is a continuation-in-part of Ser. No. 663,921, Mar. 4, 1976, abandoned. This application Sep. 13, 1978, Ser. No. 942,113

Int. Cl.³ B65D *39/04*

U.S. Cl. 215—247 **16 Claims**



1. A cannula pierceable, self-sealing, gas proof closure for sealing an open end of an air evacuated blood collection tube, which comprises;

(a) a tubular elastomeric body having

(i) flexible, elastic sidewalls;

(ii) an open first end; and

(iii) a closed second end formed by a cannula pierceable, flexible, elastic end wall integral with said sidewalls;

(b) a flange disposed radially about the periphery of said sidewalls adjacent to said first end; and

(c) a puncturable diaphragm closing the open first end, said diaphragm being a cylinder of absorbent material;

said end wall having a convex inner surface and a concave outer surface when pressure on inner and on outer surfaces is equal, said tubular body having a diameter which bears a ratio to the height of the body of about 0.8:1 and to thickness of the second end of from 5.4:1 to 12.1:1;

whereby when the closure is emplaced in and sealing an open end of an air evacuated tube, the higher pressure on the convex inner surface of the end wall as compared to the lower pressure (vacuum) exerting itself on the concave outer surface creates a pressure differential on the end wall, flexing and flattening the concave-convex configuration and creating a radial force directed toward the periphery of the end wall, said force effecting a restraining and sealing force between the closed second end of the elastomeric body and the air evacuated tube.

4,226,334

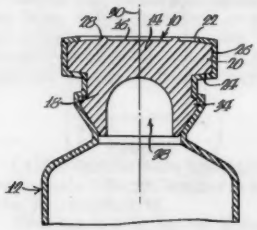
STOPPER

Gerhard H. Weiler, South Barrington, and Dieter H. Nagel, Des Plaines, both of Ill., assignors to Automatic Liquid Packaging, Inc., Arlington Heights, Ill.

Filed Dec. 14, 1978, Ser. No. 969,184

Int. Cl.² B65D *39/00*

U.S. Cl. 215—355 **15 Claims**



1. A stopper adapted to be held in place in an opening in a molded thermoplastic container which is molded about the stopper in place, said stopper comprising:

a generally cylindrical lower portion having a longitudinal axis;

a generally cylindrical upper cap portion of resilient material integral with said lower portion at one end thereof, coaxial therewith, and projecting outwardly from the periphery of said lower portion to define an annular flange thereabove, said flange having a generally cylindrical side surface substantially coaxial with said longitudinal axis;

said cap portion defining a generally circular central top surface centered about said longitudinal axis and further defining an outwardly beveled peripheral upper surface between said circular central top surface and said cylindrical side surface of said flange; and

the ratio of the exterior diameter of said flange to the thickness of said flange at the juncture of said flange and said lower portion being less than about 5.

4,226,335

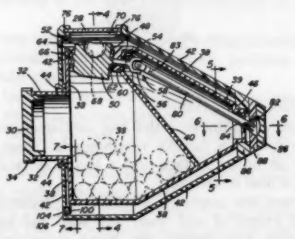
DEVICE FOR DISPENSING FISH EGGS

Edward W. Sowards, 160 Ridge Rd., Ben Lomond, Calif. 95005

Filed Aug. 29, 1978, Ser. No. 937,857

Int. Cl.³ B65D *85/30*

U.S. Cl. 221—185 **12 Claims**



1. A device for individual dispensing of a substantially spherical object comprising a container for storing a plurality of objects, the container being rotatable about a horizontal axis

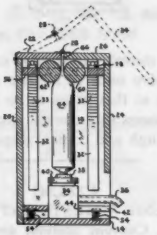
and having an opening for receiving therethrough holding means for selecting and lifting from said plurality of substantially spherical objects, one of said objects for removal through said opening, wherein said holding means includes a recess for holding said one object, said holding means being mounted inside said container by mounting means for travel in a circular path centered on said axis, said mounting means maintaining said recess in an upward direction during said travel.

4,226,336

APPARATUS FOR DISPENSING THE CONTENTS OF A TUBE HAVING A MOVABLE PLATEN

Harold A. Young, 2500 Venice Dr., Schererville, Ind. 46375

Filed Aug. 15, 1979, Ser. No. 66,578
Int. Cl.³ B65D *35/28*
U.S. Cl. 222—102 **10 Claims**



1. A tube compressing apparatus, comprising:

a housing;

spout means in said housing fixed at one end thereof, said spout means having means for connecting an open end of a tube;

clamp means in said housing fixed at the other end thereof, said clamp means operable to hold the sealed end of the tube;

first rack bar means mounted on a movable platen in said housing for reciprocal movement intermediate said spout means and said clamp means;

second rack bar means fixed to said housing intermediate said spout means and said clamp means;

roller support means in said housing intermediate said spout means and said clamp means for compressing the tube connected between said spout means and said clamp means;

first ratchet means on said roller support means engaging said first rack bar means to move said roller support means in one direction of said reciprocating movement of said first rack bar means; and

second ratchet means on said roller suppport means engaging said second rack bar means to prevent said roller support means from moving in the other direction of said reciprocating movement of said first rack bar means.

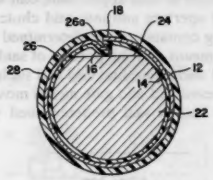
4,226,337

LAMINATED TUBE FOR COLLAPSIBLE CONTAINERS AND METHOD OF MAKING SAME

Joseph L. Abbott, 109 Primrose Pl., Lima, Ohio 45805

Continuation-in-part of Ser. No. 845,478, Oct. 26, 1977, abandoned. This application Aug. 11, 1978, Ser. No. 932,220
Int. Cl.³ B65D *35/10*
U.S. Cl. 222—107 **22 Claims**

1. A laminated tube having radially inner and outer surfaces and adapted to be used as the body of a collapsible dispensing container comprising, a tubular core having longitudinally extending circumferentially overlapped radially opposed marginal edges and radially inner and outer surfaces, the material of said core providing for said radially opposed marginal edges to be thermally incompatible, said inner surface of said core defining said inner surface of said tube, a seamless sheath of plastic material surrounding and longitudinally coextensive with said core and bonded to said outer surface of said core, and a bead of plastic material thermally compatible with the material of said sheath and extending therefrom between said



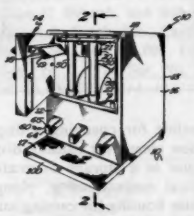
overlapped marginal edges and about the free edge of the radially inner one of said overlapped edges to provide a mechanical bond between said thermally incompatible marginal edges.

4,226,338

LIVE BAIT DISPENSER

Donald E. Schweim, Mankato, Minn., assignor to King Minnow, Inc., Mankato, Minn.

Filed Jan. 9, 1978, Ser. No. 868,027
Int. Cl.² A01K *97/04*
U.S. Cl. 222—162 **5 Claims**



1. An apparatus for dispensing live bait, the apparatus comprising:

a water tank;

a basket for restraining live bait therein, said basket being located in said tank and said basket comprising:

means permitting free water flow into and out of said basket when said basket is immersed in water and allowing drainage when said basket is removed from said water;

first and second sides;

a bottom sloping downwardly from said first side to said second side;

a basket bait aperture located in said basket second side adjacent said basket bottom;

means for lifting said basket from the water, said lifting means having an upper limit of travel;

a bait dispensing chute comprising:

first and second ends;

a bottom and two sides, said chute bottom sloping downwardly from said first end to said second end, said bottom of said chute first end being fixed no higher than said

basket bottom second end and said basket bait aperture when said basket is at said travel upper limit;

gate means located intermediate said chute ends for selectively impeding passage through said chute, said gate means having open and closed positions;

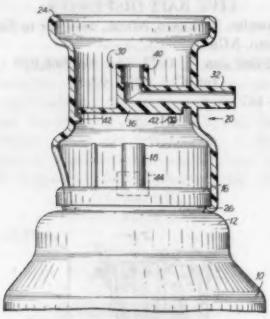
such that when said gate means is in said closed position and said basket is lifted to said upper limit, bait will fall through said basket bait aperture and into said chute thereby filling a bait measuring container of predetermined volume formed by said gate means and the portion of said chute between said gate and said chute first end and such that when said basket is lowered and said gate means moved to said open position, the bait in said predetermined volume will be dispensed.

4,226,339

INVERTIBLE SPRAY DISPENSING SAFETY CAP

Irving Landsman, 3530 Henry Hudson Pkwy., Riverdale, N.Y. 10463, and Mark Landsman, 12 Cranford Dr., New City, N.Y. 10956

Filed Mar. 16, 1979, Ser. No. 20,908
Int. Cl.³ B65D *83/14*
U.S. Cl. 222—182 **5 Claims**



1. A cap invertible for changing a dispensing container, having an actuation means for causing dispensing when depressed, from a use to a storage orientation, comprising a generally cylindrical outer housing, plunger disc movable relative to said outer housing for causing said dispensing, stop means for said plunger disc protruding inwardly from said outer housing, top and bottom lips defining top and bottom openings for connecting said cap to said container in both a use orientation with said stop means inoperative and a storage orientation with said stop means operative respectively.

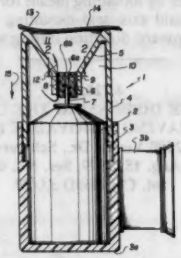
4,226,340

TISSUE TREATMENT DISPENSER

Louis Troesch, 1590 Anderson Ave., Fort Lee, N.J. 07024

Filed Aug. 15, 1978, Ser. No. 933,802
Int. Cl.³ B65D *83/14*
U.S. Cl. 222—183 **5 Claims**

1. A tissue treatment dispenser for dispensing a treatment fluid from an aerosol emitting container comprising, a bottom housing, a top housing telescopically engaged with said bottom housing and defining therewith an interior cavity, the aerosol emitting container positionable within said interior cavity and including a valve neck, said top housing having a conical portion extending downwardly and inwardly from the top of said housing and defining a conical dispersion space thereabove and a cylindrical portion depending from the bottom of said conical portion, an aerosol emitting nozzle connected in said cylindrical portion at the base of said conical portion and engageable over the valve neck of the aerosol emitting container, said nozzle having a plurality of dispersion channels spaced on the periphery thereof to form a passage for communicating said interior cavity with said conical dispersion space, said nozzle including a bore therethrough communicating with said valve neck and having a top conical portion for dispersing the aerosol emitted from the aerosol emitting container, said top housing being movable relative to said bottom housing for displacing said valve neck to actuate aerosol fluid emission through said bore so that tissue to be treated which is positioned over and closes said conical dispersion space receives fluid released through said conical dispersion space.

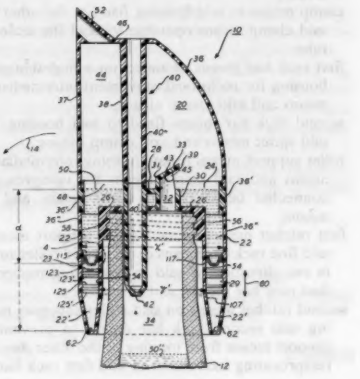


4,226,341

VOLUME ADJUSTMENT DEVICE

Edward J. Towns, Convent Station, and Edward M. Brown, Livingston, both of N.J., assignors to Neil H. Downing, Bedford Hills, N.Y.

Filed Jan. 18, 1978, Ser. No. 870,472
Int. Cl.² G01F *11/26*
U.S. Cl. 222—440 **8 Claims**



1. A volume setting device comprising:

a fluid receptacle having an upstanding side wall and a first bottom wall forming an annular fluid chamber having a predetermined volume,

an annular bottom member having a second bottom wall whose outer diameter is smaller than the diametrical spacing of said side wall,

said bottom member including a tapered resilient side wall circumscribing said second bottom wall and tapering toward said chamber side wall forming a fluid seal with said chamber side wall at the extended edge of the tapered side wall, said resilient side wall being radially inwardly compressed at said edge by said chamber side wall while maintaining said seal with said chamber side wall, said member being sufficiently resilient to permit a gas entrapped between said receptacle and said bottom member

to escape during sliding insertion of said member within said chamber toward said first bottom wall and sufficiently flexible to distort while maintaining its seal with said chamber side wall, said predetermined volume being altered to a given value in accordance with the position of said member in said chamber, and

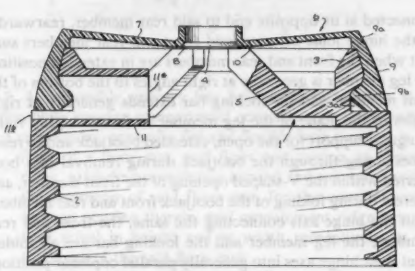
vent means projecting from the inner face of said chamber side wall, said extended edge engaging said vent means for venting said entrapped gas from between said first bottom wall and said bottom member as said member is inserted toward said first bottom wall.

4,226,342

DISPENSING VALVE PARTICULARLY FOR VISCOUS PRODUCTS

Robert H. Laauwe, 237 Green Ridge Rd., Franklin Lakes, N.J. 07417

Filed Dec. 15, 1978, Ser. No. 969,796
Int. Cl.³ B05B *11/04*
U.S. Cl. 222—494 **10 Claims**



1. A dispensing valve having a base comprising a circular rim, means for connecting said rim to a squeeze bottle's mouth, a circular wafer, and spokes connecting with and radiating from the wafer's bottom and extending radially to the rim in a plane below said bottom and positioning the wafer on and normal to the rim's axis, said wafer being thin as compared to its diameter and having a small diameter as compared to the rim's diameter and forming an annular space between the wafer and rim; and a cap comprising an elastically flexible annular diaphragm positioned above said plane and having a central opening with a periphery normally resting on the periphery of said wafer, and a depending flange connected to said rim, said peripheries having substantially mating conical surfaces, wherein substantially the entire conical surfaces contact each other, said wafer having a flat top and bottom, said spokes having inner tips which connect with said bottom only and said bottom being otherwise free from obstructions in a downward direction.

4,226,343

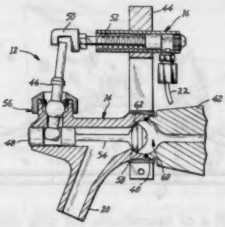
VALVING APPARATUS

James L. Fling, Portland, Oreg., assignor to Custom Systems Associates, Inc., Portland, Oreg.

Filed Aug. 28, 1978, Ser. No. 937,061
Int. Cl.³ B67D *3/04*
U.S. Cl. 222—504 **3 Claims**

1. In combination with a fluid-dispensing valve having a plunger movable selectively between opened and closed conditions, said plunger defining a surface which is exposed to and actable upon by fluid flowing through said valve to move said plunger, when such is in a partially opened condition intermediate its closed and opened conditions, to its closed condition, with such movement occurring at substantially the same rate that fluid flows into and through said valve, apparatus useable to move said plunger from its closed toward its opened condition at a first overall rate, and from its opened toward its closed condition, at a second, substantially slower overall rate, said apparatus comprising,

a pneumatically controlled ram operatively connected to said plunger, operable to move the same from its closed toward its opened condition, at said first rate, upon supply of gas to said ram, at a selected pressure and



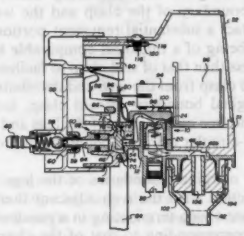
spring means operatively connected to said plunger, upon exhaust of gas from said ram, operable to produce shifting of the latter from its closed toward its said partially opened condition, whereupon plunger movement from said partially opened condition toward its closed condition occurs primarily under the influence of fluid acting on said surface.

4,226,344

CONSTANT FLOW VALVE ACTUATOR

Jack J. Booth; William C. Branch, and Robert P. Kidd, all of Dallas, Tex., assignors to Booth, Inc., Carrollton, Tex.

Continuation-in-part of Ser. No. 876,001, Feb. 8, 1978. This application Feb. 6, 1979, Ser. No. 10,083
Int. Cl.³ F16K *31/11, 11/16*
U.S. Cl. 222—504 **8 Claims**



1. A mechanism for actuating a lever connected to open a valve for allowing a pressurized fluid to flow therethrough to a nozzle, comprising in combination:

(a) an arm movable about and depending from a pivot at a position behind and extending below said nozzle,

(b) first means connected to said arm above said pivot for operating an electrical switch when said arm is rotated about said pivot,

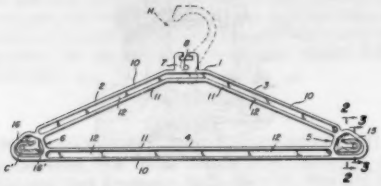
(c) a solenoid assembly linked to said lever and electrically connected to said switch for opening said valve when said switch is operated, and

(d) a second means connected to said arm above said pivot for engaging said lever to open said valve when said arm is rotated about said pivot beyond the point at which said switch is actuated for manual operation of said valve in event of electrical failure.

4,226,345
PLASTIC GARMENT HANGERS WITH INTEGRALLY MOLDED CLASPS THEREFOR

Bela G. Szabo, Carnegie, Pa., assignor to Bruce Plastics, Inc., Pittsburgh, Pa.

Filed Jan. 19, 1979, Ser. No. 4,936
Int. Cl.[3] A47J 51/097, 51/14
U.S. Cl. 223—91 1 Claim



1. A garment hanger with integrally molded clasps for cooperation therewith formed of hardened plastic material, comprising

(a) a central head portion with symmetrical lateral arms sloping downwardly therefrom to the opposite ends of the hanger with an integral horizontal bar extending between said ends and forming enlarged surface areas at their junctions,

(b) said lateral arms, bar and surface areas having thickened marginal edges surrounding continuous webs of lesser thickness delineated by said marginal edges, and

(c) a generally U-shaped clasp molded in each of said surface areas of a thickness corresponding to that of said marginal edges,

(d) each clasp being in the form of a pair of elongated substantially parallel bifurcated legs extending from a semi-circular joint with one of the legs extending in general alignment with said bar and of greater length than the other leg, and each of said legs having a smooth outer marginal boundary and an undulating inner marginal boundary,

(e) each clasp also being separable from the surrounding continuous web of the enlarged surface area by a plurality of spaced frangible tabs extending between the outer marginal boundary of the clasp and the web surroundit leaving intact a substantial remanent portion of the web,

(f) said tabs being of a thickness comparable to that of said web and less than that of said clasp to facilitate the separation of said clasp from the web and distributed around the outer marginal boundary of said clasp, including a tab adjacent the free end of each of the legs and a pair of tabs at the semi-circular marginal boundary in proximity to the legs,

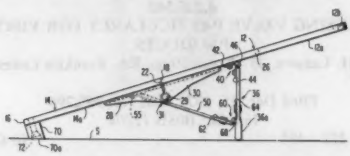
(g) the inner marginal boundaries of the legs being free of any connection with the web adjacent thereto, and said last-mentioned web terminating in a reenforcing nub of a thickness corresponding to that of the clasp or the marginal edges of the hanger.

4,226,346
COMPACT FOLDABLE BOOTJACK WITH POSITIVE LOCKING DEVICE

Posie C. Turner, 815 57th Pl. NE., Fairmount Heights, Md. 20027

Filed Mar. 30, 1979, Ser. No. 25,519
Int. Cl.[3] A47J 51/02
U.S. Cl. 223—115 2 Claims

1. A compact, foldable bootjack including an elongated, planar front member and an elongated planar rear member, means for hinge connecting said front and rear members at abutting ends for folding bottom to bottom onto each other and about the hinge connection, a right angle leg member being hinge connected at its upper end to the bottom of the front member forward of the hinge connection between said members for pivoting from a first position overlying and against the bottom of the front member to a position generally at right angles thereto with its bottom end in contact with an underlying support surface for supporting the front and rear members when in extended position inclined upwardly and forwardly, said front member bearing a V-shaped opening at its end remote from its hinge connection to said rear member to receive the heel of a boot to facilitate removal of the boot from the user's foot, the improvement comprising: a leg member locking bar being pivotably connected at one end to said leg member intermediate of its ends and adjacent the lower end thereof in contact with the support surface and being pivotably

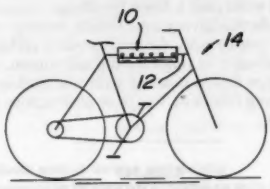


connected at its opposite end to said rear member, rearwardly of the hinge joint between said front and rear members such that when the front and rear members are in extended position, the leg member is generally at right angles to the bottom of the front member, and the locking bar extends generally at right angles to the plane of the leg member to form a highly rigid, triangular support for the open, extended bootjack and to resist forces acting through the bootjack during removal of a boot inserted within the V-shaped opening of the front member, and wherein during folding of the bootjack front and rear members about the hinge axis connecting the same, the front and rear members, the leg member and the locking bar are all folded about their hinge axes into generally parallel coplanar position.

4,226,347
TOOL KIT AND PROTECTIVE CUSHION

William H. Rice, Bryn Mawr, Pa., assignor to Blavat Advertizing, Inc., Erdenheim, Pa.

Filed Apr. 27, 1979, Ser. No. 33,878
Int. Cl.[3] B62J 11/00, 27/00
U.S. Cl. 224—35 9 Claims



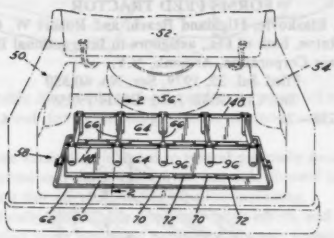
1. A tool kit and protective cushion for a bar of a bicycle comprising an elongated hollow member, said member being comprised of a resilient material and including a relatively thick wall; said member including means for enabling it to be connected to the bar so that said member fits over the bar to protect the groin and thighs of a rider; a plurality of recesses disposed around the outer wall of said member and extending lengthwise along said member for receiving tools; a portion of said member not including recesses; said portion to be located at the top of the bar to provide a cushion if the rider slips off the seat; an outer cover for said kit, and means for securing said cover to said member to keep tools from falling from said recesses.

4,226,348

AUTOMOBILE TRUNK CONTAINED GROCERY BAG HOLDER

Frank A. Dottor, and Shirley E. Dottor, both of 30000 Maplegrove, St. Clair Shores, Mich. 48082

Continuation-in-part of Ser. No. 721,823, Sep. 9, 1976, abandoned, and Ser. No. 759,252, Jan. 13, 1977, abandoned. This application Sep. 21, 1977, Ser. No. 835,427
Int. Cl.[2] B60R 5/04
U.S. Cl. 224—42.42 7 Claims



1. A collapsible grocery bag holder for installation in an automobile luggage compartment comprising, in combination:

a rectangular, generally flat and flexible base member in the form of a floor mat, said floor mat having an elevated ridge, extending completely around and unbroken within the perimeter of said floor mat, for the containment of spillage ocuring therein, said containment ridge being at least equal in height and in width respectively, as the thickness of the said floor mat;

a pair of parallel and longitudinally extending side wall members spaced apart a distance approximately equal to the combined width of said side wall members, and wherein the opposed said side wall members are pivotally attached to said floor mat by means of living hinges, said living hinges, being located between the top of the longitudinal extending sections of the said containment ridge and the bottom of said side wall members, said side wall members thereby being foldable over said floor mat into a generally flat unit, and wherein said side wall members are provided with a series of open ended correspondingly positioned slots, said slots extending upwardly from approximately midway of said side wall members and through the top edges thereof;

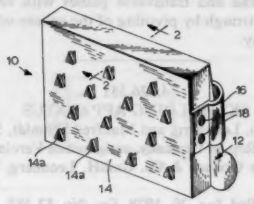
a plurality of dividers of relatively rigid material and similarly shaped, for slidable fit by a downward movement into said correspondingly positioned slots provided on said side wall members, said dividers transversely bridging the respective side wall members, forming compartments for the reception therein of filled bags of groceries; and having the opposite ends of each such divider exhibiting in cross section an "H" shaped configuration, formed of two opposed pairs of winged-like sections spaced apart at least the thickness of said side wall members by a centrally located membrane, said membrane approximating dimensionally in length and in width, as the said slots, for slidable fit therein, for supporting said dividers in a suspended position extending no lower than approximately half the depth of said side wall members, leaving the lower portion of said collapsible grocery bag holder unobstructed for accommodating overly stuffed bags of groceries; and wherein the opposed said winged sections straddlingly engage, in the immediate area of said slots, their respective said side wall members, thereby preventing lateral movement thereof, and securing said side wall members in an upright, vertical operative position.

4,226,349

CARTON GRIP

Anthony J. Uccellini, 137 Linda La., Palm Beach Shores, Fla. 33404

Filed Jul. 9, 1979, Ser. No. 55,965
Int. Cl.[3] B65D 25/28
U.S. Cl. 224—45 P 2 Claims



1. A removable grip for attachment to a fibrous container wall, said grip comprising:

a rigid body, said body having a curved hand-engagable base portion;

a plate having a plurality of pointed projections disposed therefrom at a predetermined angle pointed upwardly, said plate being attached to said rigid body, said plate and said curved portion of said rigid body having lateral separation to allow the fingers of the user sufficient space therebetween.

4,226,350

POCKET ORGANIZER

Henry Detje, 967 Marion St., Denver, Colo. 80218

Filed Oct. 12, 1978, Ser. No. 950,628
Int. Cl.[2] A44B 15/00
U.S. Cl. 224—247 6 Claims

1. A pocket organizer comprising:

(a) a body having a backing plate and a retainer plate joined at an acute angle to form a resilient V-shaped trough wherein the retainer plate has a free edge opposite from the apex of the trough;

(b) said retainer plate having at least one key loop opening formed therein having a trapezoidal slot portion and a circular aperture portion, the slot portion having a relatively longer opening at said free edge and having a relatively shorter opening into said circular portion with substantially smooth side edges convergently connecting the free edge to the circular portion, the circular portion having a first predetermined diameter;

(c) said backing plate having a circular cavity therein of second predetermined diameter and positioned such that the normal axis thereto intersects the normal axis of said circular aperture portion;

(d) means for attaching said body to another object; and

(e) a key loop having a sphere of at least one-quarter inch diameter and larger than said first and second predetermined diameters, suitably sized to be engaged for reten-

tion in and between said circular aperture and said cavity, and having key attaching means connected to the sphere said sphere being retained between the backing plate and retainer plate solely by engagement in said cavity and aperture and suitably sized to pass through said slot portion with resilient flexing of the V-shaped trough, the key attaching means being moveable through substantial arcs both in axial and transverse planes with respect to the V-shaped trough by pivoting of the sphere while engaged in the body.

4,226,351

SKI HOLDING APPARATUS

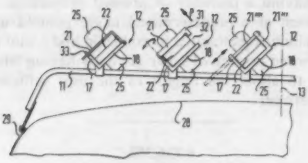
Peter Biermann, Leonberg, and Manfred Schmidt, Sindelfingen, both of Fed. Rep. of Germany, assignors to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH, Leonberg, Fed. Rep. of Germany

Filed Jun. 29, 1978, Ser. No. 53,383

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1978, 2830676

Int. Cl.³ B60R *9/04, 9/08*

U.S. Cl. 224—325 **47 Claims**



1. Ski holding apparatus comprising a rack for supporting a plurality of skis substantially parallel to one another in a substantially common plane, there being a plurality of pairs of holders arranged across the rack with the holders of each pair being spaced apart along the rack and being adapted to support at least one ski of a pair of skis at two locations the holders being further adapted to support the skis in an inclined positions with the mean transverse plane of the skis arranged at an angle within the range 30° to 60° to said common plane.

4,226,352

CONTINUOUS-ROD MAKING MACHINES

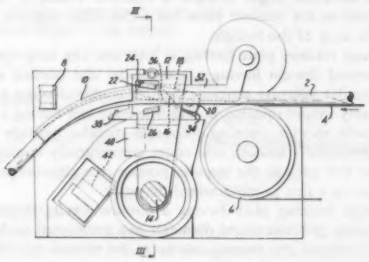
John T. Watson, High Wycombe, England, assignor to Molins Limited, England

Filed Jan. 9, 1979, Ser. No. 2,091

Claims priority, application United Kingdom, Jan. 13, 1978, 135478/78

Int. Cl.³ B26F *3/00*

U.S. Cl. 225—100 **12 Claims**



1. A continuous rod-making machine, comprising means for conveying a continuous rod along an axial path at substantially constant speed, spaced gripping means on opposite sides of said path, first moving means for moving said spaced gripping means together and into engagement with a rod on said path to grip said rod, the gripping means being arranged to extend along and engage the rod along part of its length, and second moving means for moving said gripping means in a direction generally lengthwise of the rod and for accelerating said gripping means from rest to a speed in excess of said constant speed such that the leading part of the rod is separated from the remainder of the rod as the respective parts are pulled apart.

4,226,353

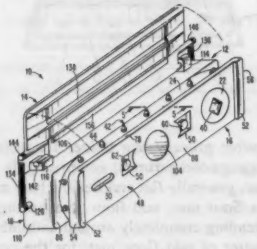
FORMS FEED TRACTOR

Silvio U. Blaskovic, Highland Beach, and Robert W. Cornell, Boca Raton, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 25, 1979, Ser. No. 60,550

Int. Cl.³ G03B *1/30;* **B65H** *17/38*

U.S. Cl. 226—74 **6 Claims**



1. A forms feed tractor mechanism for moving an inserted planer record medium in a given direction, said record medium having a record side and a back side opposite to said record side, said record medium further having perforations along the edge thereof, said forms feed tractor mechanism comprising:

a plurality of pins arranged in an endless belt and adapted to engage said perforations;

means adapted to be rotated for moving said endless belt;

housing means for containing said endless belt and moving means, said housing means having a top generally coplanar with the back side of said record medium, when inserted, a bottom generally parallel to said top, an inner side and an outer side connecting said top bottom and positioned such that said inner side is beneath said record medium, when inserted, and said outer side is beyond the edge of said record medium, when inserted, a front positioned upstream from said given direction and a back positioned downstream from said given direction, said housing means including door receiving means positioned between the edge of said record medium, when inserted, and said outer side, and spring attachment means positioned on at least one of said front or back in vertical alignment with said door receiving means;

door means including means for pivotably engaging said door receiving means to allow said door to rotate between open and closed positions, spring attachment means positioned between said engaging means and a position on said door, when closed, above the edge of said record medium, when inserted, and means extending from the bottom of said door means at a position to engage the top of said housing means when said door means is closed at a position between said outer side and the edge of said record medium, when inserted, said extending means maintaining a gap of a desired distance between that portion of the bottom of said door means above said record medium and said record medium when said door means is closed; and

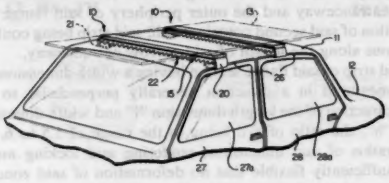
spring means connected between said spring attachment means of said housing means and said door means.

4,226,354

PORTABLE DISPOSABLE RACK FOR AN AUTOMOBILE

Robert R. Allen, 1512 Arlington La., Schaumburg, Ill. 60193

Filed Feb. 21, 1979, Ser. No. 13,216
Int. Cl.[2] B60R 9/04
U.S. Cl. 224—318 9 Claims



1. A portable disposable rack adapted to be mounted on an automobile roof for positioning objects thereon, said rack comprising:

an elongate lamination adapted to extend generally horizontally across said automobile from one side thereof to the opposing side thereof, said lamination including,

soft, elastically deformable opposing outer layers, and

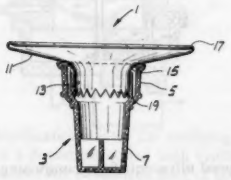
a reinforcing layer laminated between said outer layers, and said reinforcing layer having greater structural rigidity than said outer layers across the narrow width of said elongate lamination and having end portions extending beyond said outer layers for deformable, fastening location between automobile doors or door windows and the corresponding door frames or door window frames.

4,226,355

ICE CREAM HOLDER

Fred H. Helfrich, Jr., St. Louis County, Mo., assignor to Thomas P. Madden, St. Louis, Mo., a part interest

Filed May 17, 1979, Ser. No. 39,812
Int. Cl.[3] B65D 3/06
U.S. Cl. 229—1.5 H 12 Claims



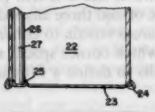
1. An ice cream holder adapted to be inserted in an ice cream cone comprising a thin-wall member of generally funnel shape and open at each of its ends, having a first relatively narrow lower portion adapted to extend down into the cone and to fit relatively snugly therein, and an upper portion flaring outwardly from said lower portion and forming a relatively wide open-mouth receptacle adapted to extend over the upper edges of the cone and laterally outwardly beyond the cone for receiving ice cream therein, the outwardly-flaring portion of said member forming said receptacle being inclined inwardly and downwardly from the periphery thereof toward said lower portion whereby with the lower portion in the cone melting ice cream is funneled down into the cone.

4,226,356

CONTAINER AND DISPENSER STRAW

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Filed Sep. 2, 1977, Ser. No. 830,064
Int. Cl.[3] B65D 1/08, 3/00, 5/00
U.S. Cl. 229—7 S 10 Claims



1. A container and dispenser for a liquid held by said container comprising:

a closed container having a circumscribing side wall, a bottom wall connected to said side wall and a top wall secured to the upper end of side wall and serving to seal liquid contents within said container,

a drinking straw disposed within said container and having an upper end portion connected to a lower portion by a bendable portion which may be bent without collapsing the wall of said straw,

tab means integral with said top wall and removable therefrom,

said tab means having at least one longitudinal formation retentively engaging a portion of the length of the upper end of said straw in a manner to permit said straw to be separated from said tab means by a manual pulling force applied between the end of said straw and said tab means,

said upper portion of said straw extending in said container at an angle to said lower portion by virtue of the bending of said bendable portion within said container,

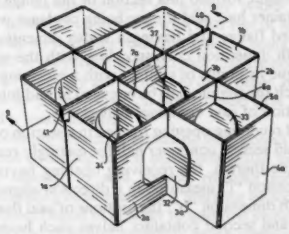
means for opening said container by pulling said tab means to provide an opening in said top wall, which opening is in line with said straw, wherein said upper portion of said straw is pulled upwardly and passes through said opening and is accessible to the exterior of said container to permit a person holding said container to drink the contents of said container through said straw.

4,226,357

SPACE DIVIDERS

Thomas J. Martin, Vancouver, Canada, assignor to MacMillan Bloedel Limited, Vancouver, Canada

Filed May 30, 1979, Ser. No. 43,751
Claims priority, application Canada, Mar. 5, 1979, 322764
Int. Cl.[3] B65D 5/48, 1/36
U.S. Cl. 229—15 9 Claims



1. A space divider for defining six partitioned spaces within

three contiguous walls related together such that one wall is between the other two and defines with them two angles which sum to 180°, the divider comprising:

a partition equal in length to said one wall,

a first articulated series of panels attached to one end of the partition,

a second articulated series of panels attached to the other end of the partition,

the two series being connected to the partition and to themselves so as to define three partitioned spaces in alignment along said partition and a fourth partitioned space adjacent the middle of said three aligned spaces, whereby two vacant corner areas remain to either side of said last-mentioned space, which corner spaces are completed by said contiguous walls to define a fifth and a sixth partitioned space.

4,226,358

PACKAGING CONTAINER

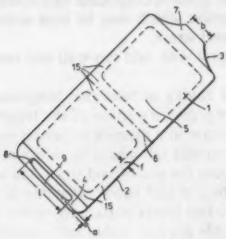
Alexander B. Ottow, Rotterdam, Netherlands, assignor to Internationale Octrooi Maatschappij, Rotterdam, Netherlands

Filed Jun. 9, 1978, Ser. No. 914,169

Claims priority, application United Kingdom, Jun. 30, 1977, 27460/77

Int. Cl.³ B65D *1/00, 5/66, 41/18*

U.S. Cl. 229—44 R **1 Claim**



1. A packaging container comprising:

first and second halves of a thermoplastic material foldably interconnected and each having a cavity adapted for packaging goods therein,

each of said container halves having a flange extending outwardly from the corresponding cavity and surrounding the periphery of the latter, the flanges of each said container halves being essentially coplanar when said container halves are in an unfolded position and being in face-to-face abutting relationship when said container halves are in a folded, locked position;

a sheet of film sealed to zones on said flanges of each of said container halves for closing the respective cavities; and

locking means carried by said flanges for keeping said container halves together in a folded position, said locking means including

(1) a tongue formed in a section of the flange of said first container half, said tongue being coplanar with said last named flange and having a width dimention "b", said width dimension corresponding with the width of the tongue its points of contact with a receiving opening in which the tongue is to be engaged in said folded, locked position of said container halves,

(2) said receiving opening formed in a section of the flange of said second container half for matingly receiving said tongue therein, the receiving opening having a length dimension "l" measured in a direction aligned with the width dimension "b", the sections of said flanges of said first and second container halves each having a thickness dimension "d", the ratio

$(l-b)/d$

being in the range of 20:1 to 30:1,

said receiving opening comprising a narrow longitudinal entranceway in said flange section of said second container half, said narrow entranceway being bounded by a strip of said last named flange section between said narrow entranceway and the outer periphery of said flange section of said second container half, said strip being continuous along the length of said narrow entranceway,

said strip of said flange section having a width dimension "a" measured in a direction generally perpendiclar to the direction of the length dimension "l" and width dimention "b", the ratio of a/d being in the range of 1.5 to 6, the ratios of said dimensions rendering said locking means sufficiently flexible that no deformation of said zones is caused by flexing said locking means for opening and closing said locking means.

4,226,359

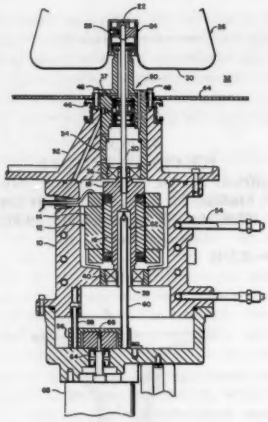
DIRECT DRIVE HIGH SPEED ULTRACENTRIFUGE

Kenneth E. Jacobson, Fremont, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 14, 1979, Ser. No. 20,387

Int. Cl.³ B04B *9/04*

U.S. Cl. 233—24 **8 Claims**



1. A high speed ultracentrifuge comprising:

a rotor chamber for receipt of a rotor;

a drive assembly in driving communication with said rotor within said rotor chamber;

a housing adjacent said rotor chamber for receipt of said drive assembly, said rotor chamber and said housing being subjected to a vacuum environment when said ultracentrifuge is operating;

a drive spindle mounted within said drive assembly;

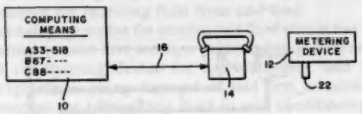
bearing means mounted on said spindle, said bearing means and said spindle forming a removable unit from said housing and said chamber; and

vacuum seals mounted adjacent said housing remote from said spindle so that said extraction of said removable unit of said spindle and bearing means will not disturb said vacuum seals.

4,226,360
METERING SYSTEM

Luther G. Simjian, Lago Mar Pl., 1750 S. Ocean La., Fort Lauderdale, Fla. 33316

Filed Dec. 19, 1978, Ser. No. 970,995
Int. Cl.[3] G06F *15/20;* H04M *11/00;* H04Q *3/72;* G06K *5/00*
U.S. Cl. 235—375 10 Claims



1. The method of updating a metering device of the postage meter type or similar type comprising:

providing a code bearing means having a first and a second code;

placing said code bearing means into cooperative relation with the metering device for causing said second code to be entered into the metering device;

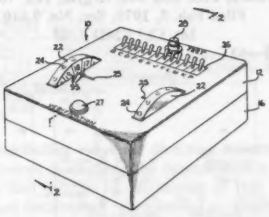
transmitting the first code from said code bearing means to a computing means and said computing means being programmed for providing in response to the receipt of said first code a third code which has a predetermined correlation with said second code, and

entering said third code into said metering device for causing said metering device to be conditioned for updating responsive to said second code and said third code being in predetermined correlation.

4,226,361
POSITIVE IDENTIFICATION SYSTEM FOR AUTHENTICATING THE IDENTITY OF A CARD USER

Leonard H. Taylor, 14335 Huston St., #207, Sherman Oaks, Calif. 91423

Filed Oct. 27, 1978, Ser. No. 955,319
Int. Cl.[2] G06K *7/06;* G09B *3/00;* H01H *43/08;* G06K *5/00*
U.S. Cl. 235—380 15 Claims



1. A positive identification device for verifying the authenticity of the user of a document coded with visible identification information, where the authorized user of said document has been given a secret code for memorization which corresponds to said visible identification information, said device comprising:

a. first entering means comprising at least one user dial for manually entering a user code into said device, said user dial having along its outer edge indicia corresponding to said user code;

b. second entering means comprising at least one operator dial for manually entering said visible identification information into said device, said operator dial having along its outer edge indicia corresponding to said visible identification information;

c. an indicator;

d. a power source;

e. an electrical circuit having an enabled and disabled state, said electrical circuit comprising a plurality of first switches which are responsive in a predetermined manner to said manually entered user code and which have an on state and an off state, and a plurality of second switches equal in number to said first switches, said second switches each having an on state and an off state, said second switches being responsive in a predetermined manner to said manually entered visible identification information, said first switches and said second switches being respectively wired together so that the state of said electrical circuit becomes enabled only upon the changing of state of said first switches being complementary to the changing of state of said second switches, said electrical circuit being connected with said indicator and said power source, said indicator being responsive to said electrical circuit being enabled, said indicator being activated only if said manually entered user code corresponds to said manually entered visible identification information;

f. first actuating means for actuating said first switches, said first actuating means being controlled in a predetermined manner by said first entering means, said first actuating means having a plurality of first coupling members equal in number to said first switches, each of said first coupling members being coupled to a respective said first switch, said first actuating means further having a first axle and at least one first cylinder having a circular cavity at each of its ends, each of said first cylinder's ends having a rim of narrow width, said first cylinder being rotatably mounted upon said first axle, said first cylinder having upon its surface a plurality of first engaging means for cooperatively engaging with said first coupling members, said first engaging means being arranged in a predetermined manner, said first cylinder being located in close proximity to said first coupling members so that said engaging means can engage said first coupling members, each of said first switches being actuated upon its respective said first coupling members being engaged by said first engaging means, said user dial being rotatably mounted on said first axle, said user dial being secured to said first cylinder, said indicia along the outer edge of said user dial being aligned with said first engaging means in a predetermined manner;

g. a first stressed torque spring, said first stressed torque spring surrounding said first axle, said first stressed torque spring being connected to and positioned between said user dial and said first cylinder when said user dial and said first cylinder are secured to each other, said first stressed torque spring being compressed and twisted so that it propels said user dial and said first cylinder apart and causes them to rotate in opposite directions upon their ceasing to be secured together, thereby preventing the detection of the predetermined manner in which said indicia along the outer edge of said user dial and said first engaging means were aligned with each other;

h. at least one first I-beam, the number of said first I-beams greater than one being equal to the number of said first cylinders greater than two, said first I-beam surrounding said first axle, said first I-beam being positioned adjacent said end of said first cylinder opposite said user dial, said first I-beam having spacers of narrow width disposed along its sides and coincident with said rim of said cylinder opposite to said user dial, said spacers being disposed so that said first cylinder and said user dial are compressed together so that they are secured to each other, but would no longer be secured to each other if said first I-beam is displaced a small distance;

i. second actuating means for actuating said second switches, said second actuating means being controlled in a predetermined manner by said second entering means, said second actuating means having a plurality of second coupling members equal in number to said first switches, each of said second coupling members being coupled to a respective said second switch, said second actuating means further having a second axle and at least one second cylinder having a circular cavity at each of its ends, each of said

second cylinder's ends having a rim of narrow width, said second cylinder being rotatably mounted upon said second axle, said second cylinder having upon its surface a plurality of second engaging means for cooperatively engaging with said second coupling members, said second engaging means being arranged in a predetermined manner, said second rotating member being located in close proximity to said second coupling members so that said second engaging means can engage said second coupling members, each of said second switches being actuated upon its respective said second coupling member being engaged by said engaging means, said operator dial being rotatably mounted upon said second axle, said operator dial being secured to said second rotating member, said indicia along the outer edge of said operator dial being aligned with said second engaging means in a predetermined manner; and

j. a second stressed torque spring, said second stressed torque spring surrounding said second axle, said second stressed torque spring being connected to and positioned between said operator dial and said second cylinder when said operator dial and said second cylinder are secured to each other, said second stressed torque spring being compressed and twisted so that it propels said operator dial and said second cylinder apart and causes them to rotate in opposite directions upon their ceasing to be secured together, thereby preventing the detection of the predetermined manner in which said markings and said second engaging means were aligned with each other.

4,226,362

HIGH PRESSURE STEAM TRAP

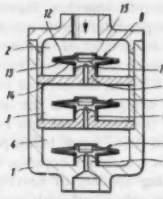
Werner Föller, Stuhr, Fed. Rep. of Germany, assignor to GESTRA-KSB Vertriebsgesellschaft mbH & Co. KG, Bremen, Fed. Rep. of Germany

Filed Aug. 16, 1979, Ser. No. 66,991

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1978, 2836400

Int. Cl.³ F16T *1/02*

U.S. Cl. 236—58 **2 Claims**



1. In a high pressure steam trap of the type which has at least two serially-connected and operated discharge control assemblies, each of which includes a thermal control element which is exposed to the condensate to be discharged, a valve seat, and a throttle element which is actuated by said thermal control element for movement relative to the valve seat, the improvement comprising:

said thermal control elements each comprising an expansion capsule which contains an evaporation liquid, the vapor pressure of the one expansion capsule is higher than the vapor pressure of the evaporation liquid in the successively-disposed expansion capsule downstream therefrom, measured at the same temperature as the one expansion capsule.

4,226,363

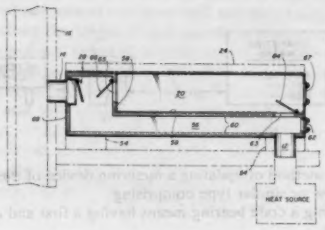
STOVE BENCH

Dana M. Sheldon, 13 Sea St., Camden, Me. 04843

Filed Oct. 20, 1977, Ser. No. 843,717

Int. Cl.³ F24B *7/04*

U.S. Cl. 237—54 **10 Claims**



1. A stove bench comprising a hollow elongated structure having walls defining a duct, having an elongated top horizontal seating surface, and having means defining an inlet and outlet, said inlet and outlet being spaced from one another along the elongated duct whereby air or gas flow to the inlet passes through the duct to the outlet, and flow control means associated with said structure including means for varying flow through the duct, said hollow structure also having a substantially horizontal wall sectioning the duct into an upper primary heat duct for supplying heat to the seating surface and a lower bypass duct that is disposed on the opposite side of the primary heat duct to the seating surface, said upper and lower ducts both extending substantially in parallel and along the bench seating surface, said flow control means including damper means associated with one of said inlet and outlet and means associated with said upper and lower ducts adapted to be either open or closed.

4,226,364

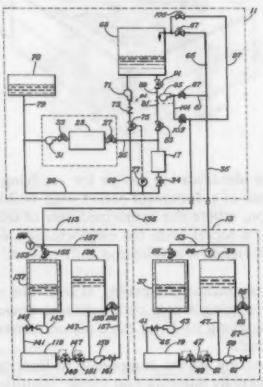
SINGLE CONDUIT AIR CONDITIONING SYSTEM

Alfred L. Utesch, P.O. Box 941, Argyle, Tex. 76226

Filed Feb. 5, 1979, Ser. No. 9,610

Int. Cl.³ F24D *3/02*

U.S. Cl. 237—63 **9 Claims**



1. In an air conditioning system which utilizes a fluid for transferring energy for air conditioning from a first location to a second location; said system being of the type wherein said fluid is conditioned by a conditioning device at said first location, said fluid is transferred to said second location for exchanging heat with a load, and said fluid is returned from said

second location to said conditioning device at said first location for reconditioning; the improvement which comprises:

a. a first storage means for storing said fluid prior to said fluid exchanging heat with said load; said first storage means being disposed at said second location and connected for transmitting fluid to said load;

b. a second storage means for storing said fluid after said fluid has exchanged heat with said load; said second storage means being disposed at said second location and connected for receiving fluid from said load;

c. a third storage means for storing said fluid after it has been returned to said first location prior to being returned to said conditioning device for reconditioning; said third storage means being disposed at said first location and connected for transmitting fluid to said conditioning device;

d. connecting means for joining in a fluid flow relation said conditioning device and said first storage means, and for joining in a fluid flow relation said second storage means and said third storage means; said connecting means comprising a single conduit from said first location to said second location;

e. a first pumping means disposed in a fluid pumping relation to said connecting means for pumping said fluid from said conditioning device through said connecting means to said first storage means; and

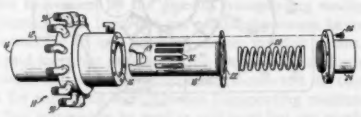
f. a second pumping means disposed in a fluid pumping relation to said connecting means for pumping said fluid from said second storage means through said connecting means to said third storage means.

4,226,365

FUEL DISTRIBUTION VALVE FOR A GAS TURBINE ENGINE

James R. Norris, Bolton; Guy W. Miller; John C. Jamison, both of Vernon, all of Conn., and Ralph D. Ransom, San Clemente, Calif., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 27, 1979, Ser. No. 52,635
Int. Cl.³ A01G *25/02*
U.S. Cl. 239—66 **6 Claims**



1. A fuel distributing valve for directing metered fuel flow from a fuel control controlling the operation of a gas turbine engine to the fuel nozzles of the burner of that gas turbine engine, said fuel distributing valve having a cylindrical casing, a sleeve affixed in a bore of said cylindrical casing having a plurality of spaced circumferential elongated slots of varying widths communicating with corresponding complimentary outlet ports in said casing communicating with said nozzles, a piston in sliding relationship with said sleeve having an annular groove, means for feeding fuel to said annular groove so that the position of said annular groove relative to said elongated slots determines the amount of fuel permitted to enter each of said nozzles.

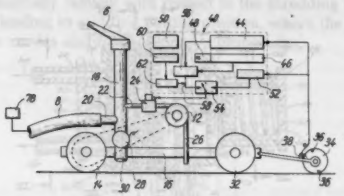
4,226,366

IRRIGATION SYSTEMS

Gunnar P. Nörtoft, Sejrup, 7323 Give, Denmark

Filed May 25, 1978, Ser. No. 909,521
Claims priority, application United Kingdom, May 27, 1977, 22589/77
Int. Cl.² B05B *3/18*
U.S. Cl. 239—69 **16 Claims**

16. In an agricultural irrigation apparatus of the type having a flexible water supply hose, one end of which is connectable with a stationary water supply source and another end of which is connected to an irrigation device that is operable to be moved along an irrigation zone and spray water therealong, driving means for advancing the irrigation device along consecutive partial lengths of said irrigation zone, and control means for controlling the operation of said driving means



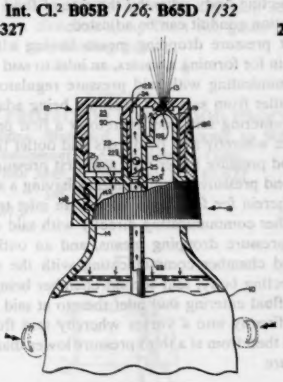
along each of said partial lengths of the irrigation zone, the improvement comprising measuring means associated with the control means for individually controlling the advance of said irrigation device during each of said partial lengths in response to measurements of both the actual distance travelled and amount of irrigation supplied by said irrigation device to insure that individual irrigation requirements of the respective partial lengths are met.

4,226,367

SQUEEZE BOTTLE DISPENSER

Thomas H. Hayes, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Dec. 11, 1978, Ser. No. 968,639
Int. Cl.² B05B *1/26*; B65D *1/32*
U.S. Cl. 239—327 **23 Claims**



1. An apparatus for dispensing liquid, comprising:

a. flexible container means for storing said liquid;

b. closure means connectable to said container means;

c. film-forming means connected to said closure means, said film-forming means having first orifice means therein through which gas or air from said container is sprayed;

d. cap means having a generally horizontal top rotatably connected to said closure means, said cap means having second orifice means in said top alignable with said first orifice means;

e. stem means connected to said closure means, said stem means having channel means through which liquid can exit said stem means and strike said film-forming means; and,

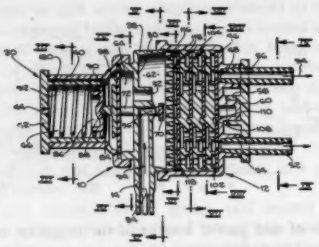
f. dip tube means connected to said stem means for conveying said liquid from said container to said stem means.

4,226,368

MULTIPLE VORTEX DRIPPER

Edwin J. Hunter, Rancho Santa Fe, Calif., assignor to The Toro Company, San Marcos, Calif.

Filed Jan. 23, 1978, Ser. No. 871,198
Int. Cl.[2] B05B 1/30
U.S. Cl. 239—542 **9 Claims**



1. In a drip irrigation system including a connecting body having an inlet adapted for connection to a source of fluid under pressure and an outlet adapted for connection to an irrigation conduit for conducting a low volume of water to an irrigation site, the improvement for effecting a pressure drop between the inlet and the outlet comprising:

(a) integral pressure regulator means for controlling the pressure of the fluid within the connecting body at a pre-selected pressure communicating with the inlet of the connecting body, said pressure regulator means including means for adjusting said preselected pressure within the connecting body whereby the rate of fluid flow into the irrigation conduit can be adjusted;

(b) first pressure dropping means having a first chamber therein for forming a vortex, an inlet to said first chamber communicating with said pressure regulator means, and an outlet from said first chamber being adapted to form fluid entering said inlet thereto at a first pressure into a vortex whereby said fluid exits said outlet therefrom at a second pressure lower than said first pressure; and,

(c) second pressure dropping means having a second chamber therein for forming a vortex, an inlet to said second chamber communicating directly with said outlet of said first pressure dropping means, and an outlet from said second chamber communicating with the outlet of the connecting body, said second chamber being adapted to form fluid entering said inlet thereto at said second pressure directly into a vortex whereby said fluid exits said outlet therefrom at a third pressure lower than said second pressure.

4,226,369

MEANS AND METHOD FOR THE DESTRUCTION OF PARTICLES ENTRAINED IN A GAS STREAM

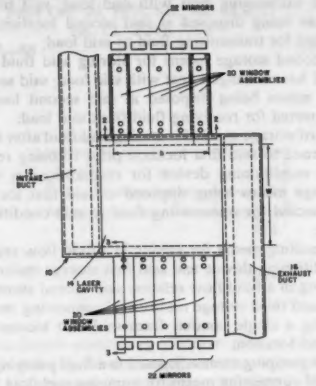
Thomas E. Botts, Wading River, and James R. Powell, Shoreham, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 17, 1978, Ser. No. 934,552
Int. Cl.[3] B02C 19/00
U.S. Cl. 241—1 **16 Claims**

1. A method for the production of a gas stream significantly free of particles larger than about 2 to 5 microns said method comprising the step of:

(a) producing a particulate laden gas stream by the combustion of coal;

(b) passing said particulate laden gas stream through a cavity, said cavity having associated with it laser means for providing illumination of appropriate wavelength and energy density to destroy particles, and having window means for admitting said laser illumination; and,



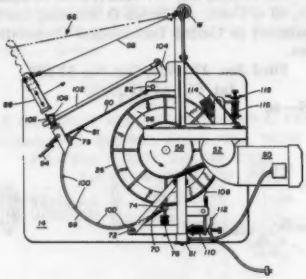
(c) exposing a significant portion of said particles to said laser illumination.

4,226,370

SOIL PROCESSING DEVICE AND METHOD

Charles L. Watson, R.R. 7, Paris, Tex. 75460

Filed Feb. 2, 1978, Ser. No. 874,696
Int. Cl.[3] B02C 17/02, 4/26
U.S. Cl. 241—30 **10 Claims**



2. A device for particulating conglomerated materials, which comprises:

a drum mounted for rotation about a substantially vertical axis;

means for effecting rotation of the drum;

said drum including a peripheral wall comprised of screen having a predetermined mesh size;

a substantially horizontal stationary surface positioned adjacent the drum;

an arcuate wall positioned in spaced relationship with the drum on said surface and mounted for movement relative to the drum; and

means for selectively urging said arcuate wall toward the rotating drum to crowd conglomerated materials placed therebetween on the surface into engagement with said drum whereby said materials are sheared by the screen wall into particles,

wherein the arcuate wall includes forward and trailing ends, and further including:

a first pivotally secured plate affixed to the forward end of the arcuate wall and in rolling contact with the periphery of the drum; and

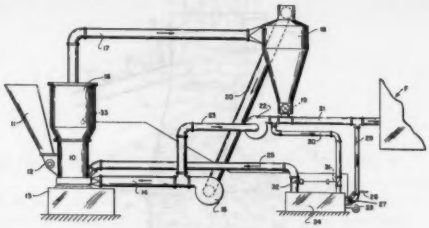
a second pivotally secured plate in rolling contact with the trailing end of the arcuate wall, said wall and first and second plates together with a peripheral portion of the drum defining the enclosure into which the materials to be particulated are placed.

4,226,371

INERT GRINDING AND DIRECT FIRING IN COAL BURNING SYSTEMS

Robert M. Williams, 16 La Hacienda, Ladue, Mo. 63124

Filed Apr. 6, 1979, Ser. No. 27,742
Int. Cl.³ B02C *21/00*
U.S. Cl. 241—31 **6 Claims**



1. Apparatus for grinding a fuel material in an inert atmosphere and transporting the ground fuel material to fire a consuming unit, said apparatus comprising: grinding means for reducing the fuel material to a transportable and combustible size; primary propelling means connected to said grinding means for moving a gaseous transporting medium through said grinding means; separator means connected between said grinding means and said primary propelling means for separating the ground fuel material from the gaseous transporting medium and returning the gaseous transporting medium to said primary propelling means; secondary propelling means connected between said primary propelling means and said grinding means and a consuming unit, said connection between said secondary propelling means and consuming unit having an inlet for receiving ground fuel material from said separator means for movement by the gaseous transporting medium to the consuming unit; inert hot gas producing means having an outlet connected to said grinding means; conduit means connecting said inert hot gas producing means with said connection between said secondary propelling means and the consuming unit for supplying inert gaseous transporting medium and ground fuel material to be used in said inert hot gas producing means.

4,226,372

DEVICE FOR THE DESTRUCTION OF MICROFILM AND SIMILAR DATA CARRIERS

Gerhard Wigand, Enzstrasse 17, 7140 Ludwigsburg, Fed. Rep. of Germany

Continuation of Ser. No. 792,098, Apr. 29, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 949,404
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1976, 2641370
Int. Cl.³ B02C *18/22*
U.S. Cl. 241—34 **21 Claims**

1. A shredding device adapted for the destruction of microfilm and similar information carriers with microimage impressions, the device comprising in combination:

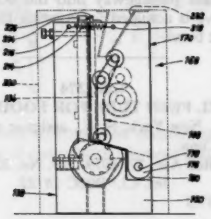
a main frame;

a shredding cutter with a power drive, the cutter being rotatably supported by the main frame and having the general shape of a milling cutter with a plurality of angularly spaced longitudinal cutting edges arranged on its periphery;

a first stationary cutting edge supported by the main frame so as to cooperate with the rotating cutting edges of the shredding cutter to define a first cutting position therewith; and

a strip feeding unit operable to feed and guide information carrier material to said first cutting position, the strip feeding unit being supported by the main frame and comprising:

a stationary guide plate having a guide surface oriented substantially radially with respect to the shredding cutter and leading to said first cutting position, where the guide plate carries said first stationary cutting edge;



means for forcibly advancing strip material along the stationary guide plate, towards the first cutting position, said strip advancing means including a plurality of rotating strip advancing members and a drive therefor, at least some of said members being arranged side-by-side and spaced apart in a direction transverse to the direction of strip advance, and each of said members forming a strip feed gap with the guide plate; and

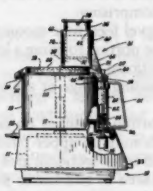
a feeding unit frame supporting the strip advancing means, including means operable to retract the strip advancing members in a direction away from the guide plate, for access to the strip feeding gaps.

4,226,373

FEED TUBE PROTECTOR FOR A FOOD PROCESSOR

James E. Williams, Stamford, Conn., assignor to Wilson Research & Development, Inc., Greenwich, Conn.

Filed Mar. 5, 1979, Ser. No. 17,822
Int. Cl.³ B02C *18/12*
U.S. Cl. 241—37.5 **21 Claims**



1. In a food processor of the type including a housing containing an electric motor drive and control means for rendering said motor drive inoperative unless said control means is actuated, a bowl mountable on said housing for enclosing a rotatable tool within said bowl driveable by tool drive means when said motor drive is rendered operative by actuation of said control means, a removable cover adapted to be positioned on said bowl, with a feed tube mounted on said cover forming a passageway for feeding food items through said cover into said bowl, and in which a food pusher can be plunged into said passageway for pushing food items toward the rotating tool, the novel safety apparatus comprising:

an outer sleeve nestable in a predetermined position around the exterior of said feed tube;

said food pusher being captured in telescoping relationship with respect to said outer sleeve for enabling said food

pusher to be moved longitudinally within said outer sleeve;

said captured food pusher being in alignment with the interior of said outer sleeve for causing said food pusher to become aligned with said food passageway and to be plungeable into said food passageway only when said outer sleeve is nested around said feed tube; and

said control means in the food processor being actuated only when said outer sleeve is properly nested in said predetermined position around said feed tube and only when said cover is properly positioned on said bowl,

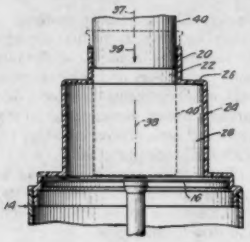
thereby inherently causing said food pusher to block access through said passageway into the bowl whenever the motor drive is actuated for rotating the food processing tool in the bowl.

4,226,374

TWO LEVEL FEED TUBE FOR FOOD PROCESSOR

Barbara Kafka, New York, N. Y., assignor to Cuisinarts, Inc., Greenwich, Conn.

Filed Apr. 27, 1979, Ser. No. 33,979
Int. Cl.³ B02C *18/22*
U.S. Cl. 241—37.5 **4 Claims**



1. For use in the cover for a food processor of the type having a working bowl for enclosing a rotary food processing tool which is adapted to rotate within said bowl, said cover being removable and being adapted to be locked on said bowl and having a feed tube mounted thereon forming a passageway for feeding food items through said cover into said bowl, and in which a food pusher can be plunged into said passageway for pushing food items toward the rotary food processing tool, a novel feed tube comprising:

an integral two level feed tube mounted on said cover having a lower tube portion forming a lower passageway with a first cross-sectional area,

an inwardly extending flange at the top of said lower tube portion,

an upper tube portion mounted on said flange, said upper tube portion forming an upper passageway therethrough having a second cross-sectional area which is less than the cross-sectional area of said lower passageway and which communicates down into said lower passageway, thereby providing a smaller upper food passageway in series with a larger lower food passageway, said food pusher being plungable through said upper and lower passageways for pushing food items toward the rotary food processing tool.

4,226,375

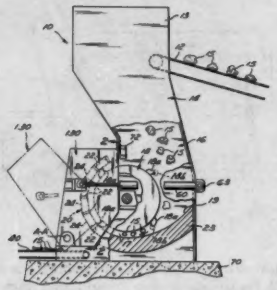
REDUCTION MILL

Wallace C. Cameron, San Pedro, Calif., assignor to Copper Alloys Corp., Beverly Hills, Calif.

Filed Dec. 21, 1978, Ser. No. 972,028
Int. Cl.³ B02C *13/284*
U.S. Cl. 241—88.4 **12 Claims**

1. In a reduction mill for material comminuted having upper inlet means for said material, rotary hammer means mounted, in a mill cage zone, for rotation below said inlet means, a grate housing, and side outlet means to receive and discharge said comminuted material, the improvement which comprises:

a grate assembly, removably mounted within said grate housing, having openings mounted in a side position of discharge with respect to a vertical plane passing through the axis of rotation of said rotary hammer means, said grate assembly comprising a plurality of screen bars having spaced projections formed along the length thereof, alternating with a plurality of cutter bars to form discharge openings alternating with cutting edges, said grate assembly coacting in a first position, with said rotary hammer means to cause said material to be comminuted



and passed through said discharge openings in said grate assembly and through said side outlet means;

pivot means for pivotally disengaging both said grate housing, and said grate assembly removably mounted therewithin, from said first position of coaction with said mill cage zone about a common pivot axis located at the lowermost portion of said grate housing whereby exposure of said entire grate assembly for access and inspection is readily obtained; and

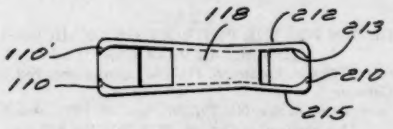
power means for pivotally disengaging said grate housing together with said grate assembly from said first position of coaction to said second position of disengagement.

4,226,376

AMPULE BREAKER

Frederick W. Pfleger, 1152 Barbara Dr., Cherry Hill, N.J. 08003

Filed Oct. 12, 1978, Ser. No. 950,812
Int. Cl.³ B02C *19/00*
U.S. Cl. 241—99 **2 Claims**

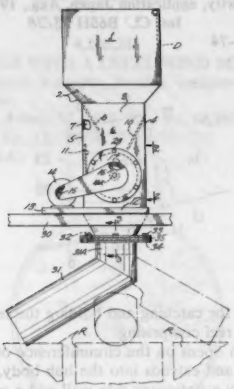


1. An ampule breaker comprising a one piece structure having two sides and two ends, each of said ends having two fulcrum surfaces extending inwardly from each of said sides, the fulcrum surfaces at one end being closer together than the fulcrum surfaces at the other end for breaking engagement with different size ampules at the different ends, said sides having internal contoured surfaces converging toward each other away from said fulcrum surfaces with the internal contoured surfaces adjacent to said one end being closer together than the internal contoured surfaces adjacent to said other end for bearing engagement with different size ampules adjacent to different ends, and retaining means for retaining a fixed relationship between each of said fulcrum surfaces and the internal contoured surfaces.

4,226,377
GLASS BREAKING MACHINE

Harold E. Shelton, 1820 - 53rd St., Albany, Oreg. 97321

Filed Nov. 6, 1978, Ser. No. 958,210
Int. Cl.[3] B02C *13/04, 13/286*
U.S. Cl. 241—99 4 Claims



1. A glass breaking machine for sorting different colored glass and comprising,

a bin for reception of glass to be broken,

a hammer mill housing below said bin,

a hammer mill disposed below said bin and journalled within said hammer mill housing, said hammer mill including multiple series of hammers with each series radially spaced from the hammer mill axis of rotation, said hammer mill including a main shaft,

said hammer mill housing defining an opening of a size permitting outward axial passage of the hammer mill for servicing purposes, a closure plate removably affixed to the hammer mill housing and normally closing said opening, and bearing means on said closure plate for the hammer mill main shaft, additional bearing means on said hammer mill housing opposite the first mentioned bearing means with the bearing means jointly supporting said main shaft,

a discharge chute, and

means swingably coupling said chute to the housing lower end whereby said chute may be manually arcuately positioned for the discharge of broken glass into one of several receptacles each containing glass of one color.

4,226,378
METHOD AND APPARATUS FOR WINDING HOLLOW FILAMENTS

James A. Fitzgerald, McHenry; Clinton V. Kopp, Barrington, and Freddie L. Washington, Waukegan, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

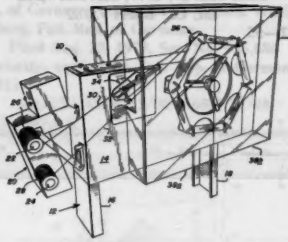
Filed Feb. 13, 1976, Ser. No. 658,143
Int. Cl.[3] B01D *13/00;* A61M *1/03;* B65H *54/02, 54/28*
U.S. Cl. 242—18 G 19 Claims

1. A method for preparing a hollow, substantially continuous, semipermeable filament bundle for use in a hollow fiber dialyzer; which bundle includes a plurality of substantially-equal-length, open-ended fibers formed from said continuous filament, comprising the steps of:

providing at least one spool of said filament;

unwinding said filament from said spool;

winding said filament onto a take-up reel and shaping said filament winding into the general form of a polygon with filament support assemblies positioned at the corners thereof, each filament support assembly comprising a pair of spaced support members upon which said filament windings rests, whereby said filament forms a plurality of elongated sections, each having a multiplicity of windings; grasping each of said sections; and

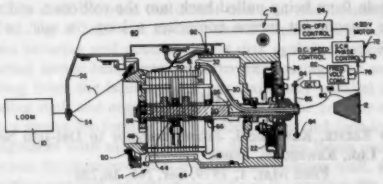


cutting said filaments adjacent said support means so as to form a plurality of open-ended filament bundles.

4,226,379
LOOM STORAGE FEEDER IMPROVEMENT

Charles W. Brouwer, E. Greenwich, and Rene J. Valois, Woonsocket, both of R.I., assignors to Leesona Corporation, Warwick, R.I.

Continuation-in-part of Ser. No. 952,501, Oct. 18, 1978, abandoned. This application Dec. 6, 1979, Ser. No. 100,984
Int. Cl.[3] B65H *51/20*
U.S. Cl. 242—47.01 9 Claims



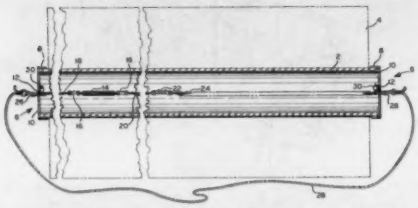
1. A strand feeding system between a strand supply and utility means such as a textile machine requiring strand to be fed at a first predetermined average rate during operation of the utility means comprising, a feeding device arranged to receive said strand from said supply and have the strand wrapped thereon for discharge thereafter to said utility means, a balloon of strand being formed in the zone intermediate the strand supply and the feeding device during advance of the strand to the feeding device, a variable speed drive motor for operating said feeding device to withdraw said strand from said supply, an on-off circuit for controlling current flow to said motor to prevent excess accumulation of strand on said drum, speed control means programmed to establish a constant driven speed of said motor in response to input feedback data, selectively adjustable input means coupled to said speed control means to advance said strand from said supply to said feeding device at a second predetermined average rate which is slightly higher than said first predetermined average rate, and detector means for sensing accumulation of strand on said feeding device and operable to activate said on-off circuit to interrupt current flow to said motor when the strand accumulation on said feeding device exceeds a preselected amount, said on-off circuit being operated at a frequency and duration to maintain said balloon during intervals when current flow to said motor is off.

4,226,380

FABRIC UNROLLING DEVICE

John W. Gay, Westminster, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 29, 1979, Ser. No. 7,522
Int. Cl.[3] B65H 75/02
U.S. Cl. 242—55 6 Claims



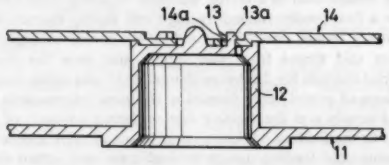
1. A device for unrolling a roll of fabric or the like supported on a roll core, said device comprising a pair of end caps adapted to fit over the opposite ends of the roll core, a spring means adapted for being passed through said roll core and attached to the end caps to put tension on the end caps so that the roll core is clamped between said two end caps, spring attachment means for securing said spring means to said end caps, handle attachment means adapted to be secured to the end caps and adapted to allow the end caps to rotate relative to said handle attachment means, and handle means secured to said handle attachment means wherein said spring means is a spring having each end connected to a chain, said end caps each have a hole through which the chain can be passed, said spring attachment means comprises a stop means which will limit the extent that the chain can be pulled outward through the hole in the end caps and swivel means which will prevent the chain from being pulled back into the roll core, and said handle attachment means comprises a loop on said swivel means.

4,226,381

TAPE REEL

Tetsuo Katata, Kawaguchi, Japan, assignor to Dai-Ichi Seiko Co., Ltd., Kawaguchi, Japan

Filed Mar. 1, 1979, Ser. No. 16,730
Claims priority, application Japan, Mar. 4, 1978, 53-27899[U]
Int. Cl.[3] B65H 75/18
U.S. Cl. 242—71.8 6 Claims



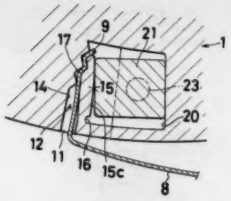
1. A tape reel comprising:
a lower reel member including a disc-like portion and integral therewith a cap-like hub extending upwardly and including an integral upper end surface,
flexible protrusions projecting upwardly from said upper end surface of said hub and having claw-shaped heads, and
a disc-like upper reel member having holes axially disposed therein, there being respective surfaces adjacent said holes for catching said claw-shaped heads, whereby said lower and upper reel members can be assembled and tightly fixed to each other by snap fitting said protrusions formed on said hub of said lower reel member into said holes formed on said upper reel member.

4,226,382

CATCHING AND HOLDING THE TERMINAL END OF A TAPE IN A TAPE REEL

Koji Watanabe, Niiza, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Aug. 13, 1979, Ser. No. 65,819
Claims priority, application Japan, Aug., 1978, 53/109438
Int. Cl.[3] B65H 75/28
U.S. Cl. 242—74 7 Claims



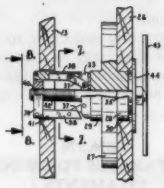
1. A means for catching and holding the terminal end of a tape in a tape reel comprising:
a slot which opens on the circumference of the hub of the tape reel and extends into the hub body, said slot being defined by a stationary side wall and a cantilevered side wall;
a vacant space behind the cantilevered wall;
a wedge for insertion into the vacant space;
whereby the terminal end of the tape is caught and held between the cantilevered wall and the stationary wall when the wedge is driven into the vacant space to push the cantilevered wall against the stationary wall.

4,226,383

SUPPORT DEVICE AND FLANGE ATTACHMENT MEANS FOR CABLE DRUMS

Homer C. Douglas, Kansas City, Kans., assignor to Cable Caddy, Inc., Lenexa, Kans.

Division of Ser. No. 861,108, Dec. 16, 1977, Pat. No. 4,176,801.
This application Jun. 4, 1979, Ser. No. 45,125
Int. Cl.[3] B65H 75/14
U.S. Cl. 242—77 7 Claims



1. Apparatus adapted for attachment to a drum having a damaged flange on one end thereof, with the damaged flange presenting a substantially central opening therein and an inaccessible inner surface surrounding the opening, said apparatus comprising:
an undamaged flange presenting a generally circular periphery and substantially equal in size to the damaged flange;
an expansible and contractable connector device having a contracted position wherein said device is small enough to pass through the central opening of the damaged flange, and an expanded position wherein said device is too large to pass through the central opening;
means coupling said connector device with said undamaged flange whereby said connector device may be inserted through the central opening of the damaged flange to position the damaged and undamaged flanges in proximity to one another; and

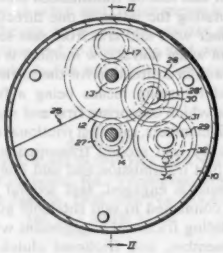
means operable from the side of said undamaged flange remote from the damaged flange to effect movement of said connector device from the contracted position to the expanded position.

4,226,384

FISHING REELS WITH A LEVEL-WIND MECHANISM

Jarding U. Karlsson, Svängsta, Sweden, assignor to ABU Aktiebolag, Sweden

Filed Aug. 22, 1979, Ser. No. 68,798
Int. Cl.³ A01K *89/04, 89/015*
U.S. Cl. 242—84.42 8 Claims



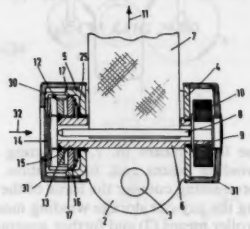
1. A fishing reel having a frame, a rotatable line spool and a level-wind mechanism which comprises a rotatable involute screw and a movable line-laying member geared to said involute screw and reciprocal in a linear movement parallel to the axis of the line spool by rotation of said involute screw, and drive means comprising a hand crank and a transmission means for rotating said line spool in a first direction for the retrieval of the fishing reel on the line spool, said line spool being rotatable in a second, opposite direction, driven by the fishing line, such as during a cast, said transmission means comprising disengageable clutch means and gear means connected between said line spool and said involute screw for rotating the latter, to distribute the fishing line on the line spool when said line spool is rotated in said first direction during the retrieval of the fishing line, delayed operation arresting means having a rotatable first member connected and disposed for rotation by said gear means, a second member fixed in relation to the frame of the reel, and a delayed-action arresting third member which is movable between a first position and a second, arresting position, and which, in said first position, permits rotation of said first member for permitting rotation of said involute screw in said first direction by said line spool by the intermediary of said gear means, whereas said third member in said second, arresting position, arrests said rotatable first member thereby locking said gear means and said involute screw against rotation, said third member, by rotation of said first member when rotation thereof in said second direction is initiated by said line spool, being movable from said first to said second, arresting position in such timed relationship with the rotational movement of said involute screw and the linear movement of said line-laying device that said delayed-action arresting third member arrives at said second, arresting position subtantially as soon as said line-laying device arrives at a central position in relation to said involute screw, whereby said level-wind mechanism is, during each casing operation, arrested with said line-laying device positioned substantially in said central position, said disengageable clutch connected between said line spool and gear means having disconnecting means for disconnecting said line spool from said gear means when the former is rotated in said second direction and the latter is arrested by said delayed-action arresting means.

4,226,385

RETRACTOR FOR SAFETY BELTS

Hermann Meiller, Amberg; Horst Hocke, Mimbach; Otto Kunst, Michael-Poppenricht, and Paul Hartl, Amberg, all of Fed. Rep. of Germany, assignors to Messrs. Willibald Grammer, Amberg, Fed. Rep. of Germany

Filed Aug. 25, 1978, Ser. No. 936,686
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738312
Int. Cl.³ A62B *35/00;* B65H *75/48*
U.S. Cl. 242—107.4 R 8 Claims



1. A retractor for a safety belt, comprising: a housing having a housing wall, a winding shaft having one end journaled in said housing wall so as to be non-displaceable axially of said shaft, a retracting spring acting on said shaft, for winding up the safety belt to be fastened to it, detent means between the housing and winding shaft and including a detent disk provided with detent elements distributed over its periphery, and being fixed to said winding shaft, and also including a counter-detent disk mounted so as to be axially displaceable on the winding shaft between the detent disk and said housing wall and having at least one counter-detent element and notches, means securing said counter-detent disk against rotation, said securing means being connected to the housing wall and extending from the housing wall approximately parallel to the winding shaft and engaging said notches in the counter-detent disk, a spring for forcing said counter-detent disk into locking engagement with said detent disk, said spring being provided between the counter-detent disk and the housing wall, and an actuating member for actuating said axially displaceable counter-detent disk for releasing said spring, said actuating member forming a pushbutton displaceable axially to the winding shaft and overreaching the detent disk in a caplike manner and having a lip gripping the counter-detent disk.

4,226,386

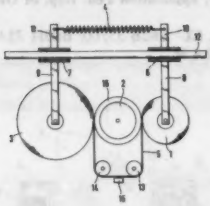
TAPE RECORDING/REPRODUCING TRANSPORT SYSTEM, PARTICULARLY FOR LONGITUDINAL VIDEO TAPE RECORDING

Horst Rubi, Hildesheim, Fed. Rep. of Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Jun. 20, 1979, Ser. No. 50,319
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1978, 2829047
Int. Cl.³ G03B *1/04;* G11B *15/32*
U.S. Cl. 242—192 9 Claims

1. Tape recording/reproducing transport system having
a drive roller means (2);
a tape take-up storage winding (1) rotatable about a take-up axis;
a tape pay-out storage winding (3) rotatable about a pay-out axis, parallel to said take-up axis,
said storage windings being movably located radially adjacent the drive roller means (2) to permit movement of said axes of rotation relative to the axis of rotation of the drive roller means;
spring means (4) providing a spring force and pressing said

storage windings with essentially equal force against the drive roller means,
and means (6, 7, 10, 11, 12) providing an additional changeable force to the respective storage winding against the drive roller means,
and comprising, in accordance with the invention,



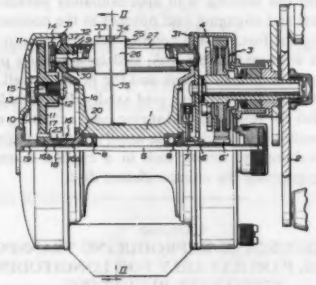
tilting torque force means (6, 7, 12) acting on both said storage winding means and, in operation, generating a friction force acting counter the force of the spring means (4) pressing the pay-out storage winding means (3) against the drive roller means (2) and further generating a friction force acting in the sense of the force exerted by the spring means (4) to increase the force of engagement of the take-up winding means (1) with the drive roller means (2).

4,226,387

MULTIPLYING FISHING REEL WITH LEVEL-WIND CARRIAGE

Jarding U. Karlsson, Svängsta, Sweden, assignor to ABU Aktiebolag, Sweden

Filed Nov. 20, 1978, Ser. No. 961,904
Claims priority, application Sweden, Nov. 28, 1977, 7713419
Int. Cl.³ A01K *89/02, 89/04*
U.S. Cl. 242—212 **1 Claim**



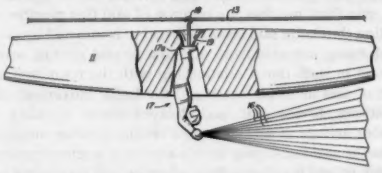
1. A multiplier fishing reel comprising a frame; a line spool rotatably supported by said frame; a hand crank and a first transmission between said hand crank and said line spool for rotating the latter by means of said hand crank for the retrieval of a fishing line on said line spool; a level wind mechanism including an evolute screw member having an endless thread and mounted rotatably in said frame, a second transmission connected between said line spool and said screw member for rotating the latter by means of said hand crank via said first transmission and said line spool, a tubular guide member which partly encompasses said screw member and is rotatably mounted in said frame for rotational movement about the longitudinal axis of said screw member, a slide member which is mounted on said tubular guide member for sliding movement therealong and to be rotated therewith, said slide member having means in engagement with said endless thread of said screw member to be driven by the latter in a reciprocal movement along said tubular guide member when said screw member is rotated, a level-wind arm supported by said slide member and having an outer end with means forming an open fishing line catching and guiding groove; said slide member being pivotable about the longitudinal axis of said screw member by rotation of said guide member for pivoting said arm between first and second angular positions, said first position being a normal operating position for catching the line into said groove and for levelling the line on said line spool when the latter is rotated by said hand crank for retrieval of the line on said spool, and said second angular position being an inoperative position in which the fishing line is permitted to go free from said arm for easy running out from said line spool during casting, stop position determining means defining stop positions in opposite angular directions for said arm in said first and second angular positions thereof, and returning means connected between said second transmission means and said guide member for rotating the latter in one direction for returning said slide member with said arm from said second to said first angular position when said screw member is rotated by means of said hand crank in a direction for the retrieval of the line on said spool, said returning means being a frictionally acting coupling means which comprises first and second cooperating frictional clutch members, said first frictional coupling member being rotatable by said second transmission from said hand crank via said first transmission and said line spool when said first clutch means is engaged, said second frictional clutch member being connected to said rotatable guide member and positioned in sliding frictional engagement with said first frictional clutch member, said frictional clutch members being able to slip in relation to each other after rotating said guide member a sufficient angle to return said arm to said first position, which is a stop position, and said slide member with said arm being adapted to be pivoted to said second position automatically when said first clutch means is disengaged and a cast is initiated, said frame including opposite frame members having coaxial openings and bearings therein, said screw member having opposite ends journalled in said bearings, said bearings having means which project into opposite ends of said tubular guide member and forming supporting means for the latter in relation to said frame, a gear wheel which forms part of said second transmission supported on one end of said screw member in a position outwardly of the corresponding one of said bearings, a spring washer mounted between and in sliding frictional engagement with one end of said gear wheel and the adjacent end of said corresponding one of said bearings for transmitting drive torque from said gear wheel to said guide member through said corresponding one of said bearings.

4,226,388

TOY PARACHUTE RELEASABLE FROM A KITE STRING

Bill W. Tilghman, 5604 W. Palo Verde Ave., Glendale, Ariz. 85302

Filed Jun. 22, 1979, Ser. No. 50,987
Int. Cl.³ B64C *31/06*; A63H *27/08*
U.S. Cl. 244—155 R **1 Claim**



1. In combination with a toy parachute for being attached to and traveling up a kite string with the wind and for being released from said string for free flight to the ground, said toy parachute including,
a weight,
a parachute having a canopy and a plurality of shroud lines, said shroud lines being separately attached to said canopy

at their upper ends and attached to said weight at their lower ends,

carrier means, connected to said weight, for movably engaging said kite string, and

means for releasing said carrier means from said string into the air for free flight to the ground,

a device for flight, comprising,

(a) at least one member having

(i) surfaces generally shaped, contoured and dimensioned such that movement of said device through the air provides aerodynamic lift for said device, and

(ii) an aperture sized to permit said carrier means to pass therethrough and engage said string, and

(b) means contacting said weight when said carrier means is engaging said string for preventing passage of said weight through said aperture,

said device responsive when said carrier means is released from said string into the air to allow said carrier means to pass through said aperture and to disengage said weight from said device such that said device and said toy separately free flight to the ground.

4,226,389

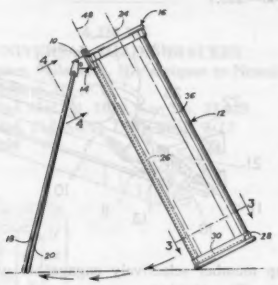
GOLF BAG SUPPORT STAND

Otto Neth, 7321 Corregidor Rd., Vancouver, Wash. 98664

Filed Jun. 26, 1978, Ser. No. 919,425

Int. Cl.[2] A63B *55/00*

U.S. Cl. 248—96 **1 Claim**



1. A support stand for supporting an elongate bag such as a golf bag or the like, comprising

a mounting member adapted to be attached to an upper portion of said bag, said member having inner and outer clamp sections and means for clamping said sections tightly against inner and outer surfaces of the bag,

first and second legs mounted on said member for swinging in first and second planes, respectively, toward and away from said bag when said member is attached thereto,

means producing swinging of said second leg through a defined angle within its plane as said first leg is swung through a defined, proportionately smaller angle within its plane, said producing means including a guide member pivotally mounted on said mounting member for swinging toward and away from said bag, when said mounting member is attached thereto, said guide member having an elongate substantially linear slot, the axis of which is asymmetric with respect to said first and second planes, through which slot upper portions of said legs are received for shifting therealong,

a disc pivotally mounted on said mounting member from which one of said legs extends, said disc including a pair of notches formed thereon,

detent means connected to said mounting member including a flexible arm provided with a detent operable for releasably locking said legs in their extended and retracted positions by engaging a selected notch formed on said disc, and

a third leg attached to said mounting member and positioned to extend into the bag, substantially parallel to the longitudinal axis thereof, when said mounting member is attached to the bag.

4,226,390

MOUNTING DEVICE

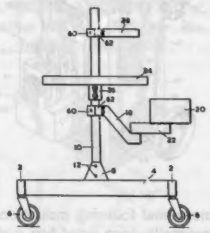
Christopher L. Steggall, London, England, assignor to Medishield Corporation Limited, London, England

Filed Nov. 2, 1978, Ser. No. 957,106

Claims priority, application United Kingdom, Nov. 7, 1978, 46308/78

Int. Cl.[2] A47G *29/00*

U.S. Cl. 248—124 **6 Claims**



1. A device for rotatably mounting an arm on a substantially vertical column comprising a split ring encircling the column at a chosen location along its length and secured thereto; a split clamp embracing said split ring encircling said columm and capable of rotative movement about the split ring and column; and means for securing a support on at least one element of said split clamp.

4,226,391

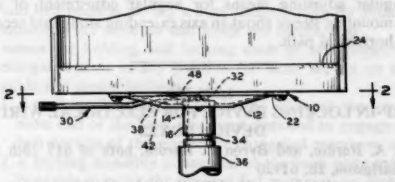
CHAIR SUPPORT

Henry B. Keultjes, Mansfield, Ohio

Filed Apr. 2, 1976, Ser. No. 673,127

Int. Cl.[3] F16M *11/00*

U.S. Cl. 248—176 **2 Claims**



1. A support for fixing the seat of a chair to the top of a spindle having a locking taper thereon, said support comprising: a plate the center portion of which is dished downwardly below a peripheral portion extending around its side edges, said peripheral portion extending around its side edges, said peripheral portion providing a bearing surface to receive a chair seat, said center portion having a hole therethrough, a stiff sleeve the top end of which extends through said hole with the opening through said sleeve being positioned generally perpendicularly to said peripheral side edge portion of said plate, said opening of said sleeve having a taper that opens downwardly for locking engagement with the top end of a spindle, and said sleeve being of a thicker material than that of said plate, a continuous vibration transmitting ring weld be-

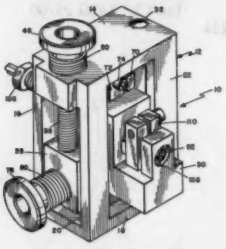
tween said sleeve and said plate, and whereby a sharp lateral blow on said sleeve produces vibration from the sleeve into said plate and back to the sleeve to help unlock the sleeve from a spindle received therein.

4,226,392

THREE DIMENSIONAL FINE FOCUS DETECTOR MOUNT

Roberto W. Healy, Los Angeles, Calif., assignor to General Dynamics Corporation Pomona Division, Pomona, Calif.

Filed Jun. 5, 1978, Ser. No. 912,788
Int. Cl.³ F16M *11/04*
U.S. Cl. 248—178 **12 Claims**



1. A three dimensional focusing mount comprising:
a housing of generally open sided box construction,
movable mounting means including a vertical adjusting block slidably mounted for vertical movement on guide means within said housing,
a horizontal adjusting block slidably mounted in said vertical adjusting block for horizontal movement relative thereto,
adjusting means for adjusting said mounting means in three directions relative to the base member, said adjusting means including first differential adjusting means for movement of said vertical adjusting block along a vertical path relative to said base member, and second differential adjusting means for movement of said horizontal adjusting block along a first horizontal path relative to said vertical adjusting block;
a mounting sleeve for mounting a focusing element adjustably mounted on said horizontal adjusting block for movement along a second horizontal path, said second horizontal path being at a right angle to said first horizontal path, and
angular adjusting means for angular adjustment of said mounting sleeve about an axis extending along said second horizontal path.

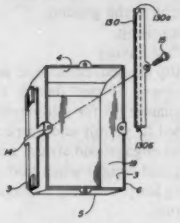
4,226,393

SNAP-IN LOCKING DEVICE FOR ELECTRICAL WIRING DEVICE BOXES

Jack A. Rardin, and Byron C. Rardin, both of 617 18th St., Charleston, Ill. 61920

Filed Apr. 12, 1979, Ser. No. 29,497
Int. Cl.³ A47B *96/06*
U.S. Cl. 248—205 R **21 Claims**

1. A locking device for an electrical wiring device box, comprising a base lying in a first base plane for positioning against a wall of said wiring device box, said wall of said wiring device box having a front edge bordering an open front wall of said wiring device box and a rear edge bordering a rear wall of said wiring device box, first frictional grip means extending from said base to frictionally grip a front edge portion of said wall of said wiring device box when said locking device is mounted thereon, second frictional grip means extending from said base to frictionally grip a rear edge portion of said wall of said wiring device box when said locking device is mounted thereon, and resilient arm means extending from said base, said resilient arm means including a first end portion secured to said base and a second free end portion normally spaced apart outwardly from said first base plane and capable of being flexed inwardly toward said base plane, said second



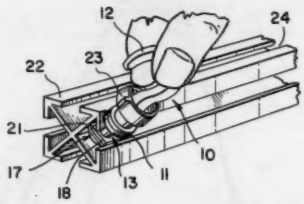
free end portion of said resilient arm means being closer to said front edge of said wiring device box than said first end portion when said locking device is mounted on said wiring device box.

4,226,394

ADJUSTABLE MOUNTING ARRANGEMENT FOR HOOKS AND THE LIKE

Ruediger Einhorn, Katonah, N.Y., assignor to Coats & Clark, Inc., Stamford, Conn.

Filed Oct. 18, 1978, Ser. No. 952,262
Int. Cl.² A47F *5/00*
U.S. Cl. 248—225.1 **18 Claims**



1. A cap member selectively engageable with a hollow slotted element, comprising:
an external threaded portion having a generally cylindrical cross-section with the threads thereof having a given axis of symmetry through the center of curvature thereof;
a sector-shaped shank portion adjacent said threaded portion and having flat and curved surface parts parallel to said axis, with said flat part relatively close to said axis and the major portion of said curved part relatively remote from said axis; and
a lead portion adjacent said shank portion, said lead portion comprising (i) a mounting part having a regular polygonal cross-section perpendicular to and symmetrically disposed about said axis for engaging said slot, and (ii) a rounded end part, said end part cooperating with said mounting part to form a plurality of shoulders for retaining said member in said slot; and
an internally threaded cap for threadably engaging said threaded portion of said member.

4,226,395

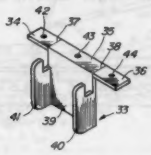
OUTER CORNER EDGE HOLDER

Pitts N. Bellinger, 5465 Crown Ave., Charleston, S.C. 29406

Filed Apr. 12, 1979, Ser. No. 29,290
Int. Cl.³ A47M *1/10*
U.S. Cl. 248—263 **3 Claims**

1. A holder for supporting a rod on a corner of a structure comprising:

(a) securing means attached to the outer edge of said corner;
(b) a front support section attached to said securing means and extending over a portion of the outer facing of said corner; and
(c) a rod support section attached to said front support section operative to have said rod attached thereto;
whereby said rod is supported on said holder by said holder being secured to said outer edge of said corner, thereby not defacing, with said securing means, said outer facing



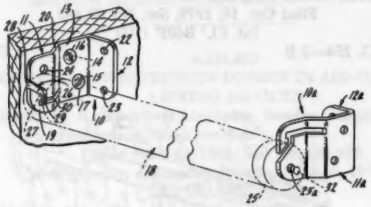
of said corner of said structure with securing means;
wherein said securing means comprises a top support section secured to said front support section, said top support section comprising a center section and two outer sections, each separated from said center section by a tearing edge;
whereby either one of said two outer sections may be removed in order to utilize said holder on either side of said structure.

4,226,396

UNIVERSAL SHADE BRACKET

Michael J. Bowers, Cedarville, Ill., assignor to Newell Companies, Inc., Freeport, Ill.

Filed Mar. 21, 1979, Ser. No. 22,425
Int. Cl.[3] A47H 1/10; E06B 9/17
U.S. Cl. 248—268 **2 Claims**



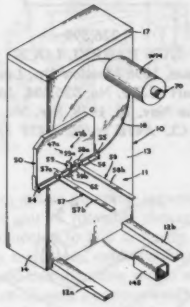
1. A one-piece, universal shade mounting bracket capable of supporting either end of a window shade assembly from a base structure whose mounting surface is above, perpendicular to, or vertically parallel to the axis of said window shade assembly, said bracket including
an elongated first body section,
said elongated body section being substantially longer than it is wide, and substantially wider than it is thick,
a second body section,
said second body section extending generally perpendicularly outwardly from the elongated first body section at one end of said elongated first body section,
the thickness of said second body section being dimensionally substantially less than its length or width,
each of said body sections having aperture means therein constructed and arranged to receive fastening means for securing the bracket to a base structure whose mounting surface is above, perpendicular to, or vertically parallel to the axis of said window shade assembly,
the end of the elongated body section opposite the end of said elongated body section which is integral with the second body section having first and second pin receiving apertures,
one of said pin receiving apertures being constructed and arranged to loosely, but restrainedly, receive the round end of a window shade assembly,
the other of said pin receiving apertures being constructed and arranged to receive the flattened pin of a window shade assembly,
said pin receiving apertures being so arranged that the flattened pin of the window shade assembly is always disposed in a vertical position irrespective of the orientation of the base surface to which the bracket is fastened.

4,226,397

PACKAGE SUPPORTING ASSEMBLY MEANS

Robert F. Carlson, Lafayette, N.J., assignor to Stretch Wrap, Inc., Cedar Grove, N.J.

Division of Ser. No. 900,872, Apr. 28, 1978, Pat. No. 4,166,348. This application Feb. 12, 1979, Ser. No. 11,492
Int. Cl.[3] E04G 3/00
U.S. Cl. 248—274 **1 Claim**



1. A package supporting assembly for a machine for wrapping a package including,
a. back plate means having connecting means thereon,
b. guide rail means connected to said back plate means,
c. at least two elongated arms slidably mounted on said guide rail means for movement towards and away from each other,
d. each of said elongated arms includes a hub portion,
e. said hub portion having a bore therethrough for slidably mounting the same on said guide rail means, and
f. means for holding and locking each of said respective elongated arms in any position the same are set on said guide rail means includes,
1. a resilient flat member connected adjacent the lowermost end of the back plate and disposed to engage the hub portion of the respective elongated members, and
2. a locking assembly connected to the back plate means operable to move the resilient flat member into locking engagement with said hub portion when the elongated arms are in a given setting to release the same to permit the position of the elongated arms to be changed.

4,226,398

FURNITURE SWIVEL

Elmer C. Freber, St. Louis, Mo., assignor to Marquette Tool and Die Company, St. Louis, Mo.

Filed Jan. 15, 1979, Ser. No. 3,107
Int. Cl.[2] F16M 13/00; A47C 1/02
U.S. Cl. 248—415 **19 Claims**

1. In combination with a piece of furniture having two components that swivel relative to each other about an axis, an improved swivel unit between the components, said swivel unit comprising a first plate attached to one of the furniture

components and having a cross wall and a generally axially directed flange at the periphery of the cross wall with the flange being concentric to the axis; a bearing set into the first plate such that it lines the inwardly presented surface of the flange and the adjoining surface of the cross wall; a second

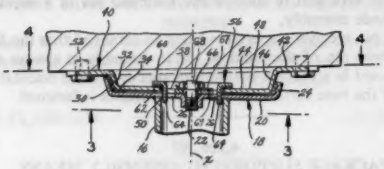


plate overlying the first plate and being attached to the other furniture component, the second plate having a hub that projects toward the first plate and bears against the bearing such that the bearing takes both axial and radial loading; and retaining means for preventing separation of the first and second plates.

4,226,399

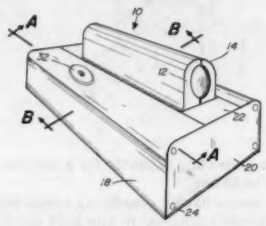
GUN BARREL LOCK

George H. Henderson, 1098 Meadow Dr., Lennon, Mich. 48449

Continuation-in-part of Ser. No. 926,494, Jul. 20, 1978. This application Nov. 16, 1978, Ser. No. 961,132

Int. Cl.[2] A47B *96/06*; A47F *7/00*

U.S. Cl. 248—553 **7 Claims**



1. A gun barrel locking mechanism comprising:

a pair of opposed jaws, adapted to matingly abut, the jaws being configured to encircle the barrel of a gun when in mating abutment;

at least one pivot, the pivot mounting one jaw thereon such that at least one jaw is pivotally rotatable toward the other jaw,

first means for locking the pivotally rotatable jaw against rotation when jaws are in mating abutment,

said first means for locking comprising:

a housing associated with the pivotal jaw;

a leaf spring attached at one end to said housing;

the free end of said leaf spring biased toward said jaw; and

wherein the jaw has an indentation therein which received the leaf spring upon mating abutment of the jaws, the leaf spring preventing rotation of the pivotal jaw when in said indentation.

4,226,400

GUIDE MEANS FOR HONING AND LIKE MACHINES

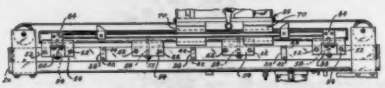
Frank E. Vanderwal, Jr., St. Louis County, Mo., assignor to Sunnen Products Company, St. Louis, Mo.

Filed Dec. 15, 1978, Ser. No. 969,675

Int. Cl.[3] F16M *1/00, 3/00*

U.S. Cl. 248—646 **10 Claims**

1. Means for accurately locating and supporting two rail members in spaced parallel relationship comprising a base structure having spaced substantially parallel first and second upwardly extending wall portions, means mounted on said first wall portion including a plurality of spaced rail support members each having an upwardly facing surface formed thereon for engaging an associated one of the spaced rail members to be supported thereby, means mounted on the second upwardly extending wall portion for engaging and supporting the other of said rail members in spaced parallel relation to the aforesaid rail member, said means including an elongated wall member and means fixedly attaching said elongated wall member to said second upwardly extending wall portion to extend substantially along the length thereof, shim means positioned



between said elongated wall member and said second upwardly extending wall portion at selected locations therealong to compensate for imperfections in the alignment thereof, a plurality of rail support members attached to said elongated wall member at spaced locations therealong, each of said rail support members having a rail engaging upper surface formed thereon, and spaced threaded adjustment members located along said second wall portion and adjustable therein to predeterminably space the elongated wall member and the rail engaging members thereon transversely relative to the second wall portion.

4,226,401

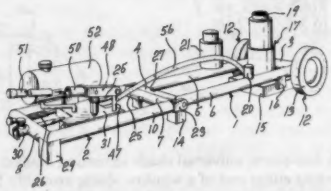
HYDRAULIC FLOOR JACK

Firmin Coulombe, P.O. Box 142, Grosses-Roches, Cte Matane, Quebec, Canada (G0J 1K0)

Filed Oct. 10, 1979, Ser. No. 83,403

Int. Cl.[3] B60P *1/00*

U.S. Cl. 254—2 B **6 Claims**



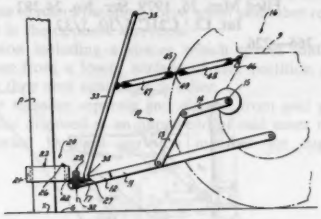
1. A hydraulic floor jack comprising an articulated frame including a front and a rear frame sections hinged one to the other, flexible tire wheel means attached to the front frame section and rollably supporting the same, a locking device connected to said frame and operatively locking the rear frame section in selected angular elevation relative to the front frame section, a rigid base fixed to said front frame section adjacent said flexible tire wheel means, and depending therefrom at a predetermined limited height for engagement with the ground upon flexing of any tire of the flexible tire wheel, an hydraulic cylinder secured upright on said base, an hydraulic fluid supply mounted on the frame, and a pump secured to the rear frame section, connected to the hydraulic fluid supply and to the hydraulic cylinder and selectively supplying hydraulic fluid under pressure to the hydraulic cylinder upon selective actuation thereof.

4,226,402

POST PULLER

James E. Muth, 5050 Athens-Boonesboro Rd., Rte. 7, Lexington, Ky. 40511

Filed Apr. 16, 1979, Ser. No. 30,692
Int. Cl.[3] B66F *1/02*
U.S. Cl. 254—30 17 Claims



1. Apparatus for use with a three-point tractor hitch having a draw bar means being upwardly movable and being rotatable about a substantially horizontal first axis, said apparatus for pulling posts upwardly from the ground and comprising:

a U-shaped, three-sided post grapple having two opposing jaws connected together and defining a grapple open at one end,

pivot mounting means extending outwardly from one of said jaws for pivotally mounting said grapple to said draw bar means for pivoting about a second axis perpendicular to said first axis, and

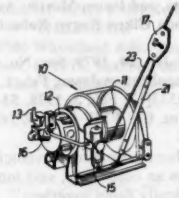
handle means attached to said pivot mounting means on an opposite side of said second axis from said grapple, said handle means extending upwardly from said pivot mounting means to permit manual pivoting of said grapple about both said first axis and said second axis, whereby said jaws are operable to engage a post, pivoting said grapple about said first axis, and pull said post from the ground when said draw bar is moved upwardly.

4,226,403

OVERLOAD PROTECTION DEVICE IN AIR-OPERATED LIFTING DEVICES

Stefan H. G. Schörling, Linköping, Sweden, assignor to Atlas Copco Aktiebolag, Nack, Sweden

Filed Nov. 17, 1978, Ser. No. 961,885
Claims priority, application Sweden, Nov. 25, 1977, 7713335
Int. Cl.[3] B66D *1/48*
U.S. Cl. 254—273 7 Claims



1. In an overload protection device for preventing excess of allowed workload in air-operated lifting devices, such as winches, which comprise a drum (11) for carrying a wire (23) wound therearound, a motor (12) supplied by a compressed air source (14) for driving the drum, a control valve (13) for controlling the supply of compressed air to the motor, and a braking device (22) associated with the drum (11), said braking device being supplied with compressed air for releasing thereof upon actuation of the control valve (13), the improvement comprising:

a main valve (24) connected between the motor (12) and the compressed air source (14), and

a load sensing device (17) which is arranged to adjust the main valve (24) by an air signal so as to stop the motor (12) due to overloading,

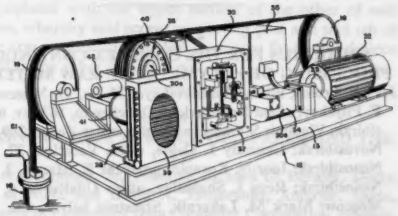
the braking device (22) being adapted to be applied by venting through the main valve (24) upon an adjustment of the main valve (24) caused by the load sensing device (17).

4,226,404

UNIVERSAL LONG STROKE PUMP SYSTEM

Rene J. L. Zens, Houston, Tex., assignor to Michael P. Breston, Houston, Tex., a part interest

Filed Mar. 7, 1977, Ser. No. 775,065
Int. Cl.[2] B66C *23/72*
U.S. Cl. 254—359 27 Claims



1. In a long-stroke pumping apparatus comprising: a rotatable drum, a pair of rotatable sheaves, traction cable means drivingly connected to said drum for transmitting the torque produced by said drum, cable connector means connected to one end of said traction cable means which is guided over one sheave into an oil well, a counterweight assembly connected to the other end of said traction cable means which is guided over the other sheave into a counterweight well, reversible power means for rotating said drum a number of turns in one angular direction and then in an opposite angular direction during one long cycle of pumping operation; the improvement wherein said reversible power means includes a hydraulic system having a hydraulic control network and a hydrostatic transmission, said transmission including: a prime mover, a variable-delivery hydraulic pump driven by said prime mover, and a reversible hydraulic motor powered by said pump and being directly coupled to said drum; and load cable means coupled to said cable connector means through said one sheave and to said counterweight assembly through said other sheave, said load cable means being drivingly unconnected to said drum.

4,226,405

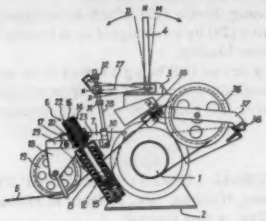
MECHANICAL SAFETY DEVICE FOR A WINCH

Guy S. R. Roodt, 6, rue Jules Gouchault, 45100 Orleans, France

Filed Mar. 29, 1979, Ser. No. 25,022
Claims priority, application France, Apr. 14, 1978, 78 11058
Int. Cl.[3] B66D *1/00*
U.S. Cl. 254—335 10 Claims

1. A safety device for a winch having a rotatable drum on which cable means are arranged to be wound and unwound, the safety device comprising two spaced longitudinal elements between which said drum is arranged, each said longitudinal element extending away from the drum in the same direction, a first transverse element connecting the longitudinal elements, at least one telescopic sleeve pivotably mounted on said first transverse element, a calibrated spring being received within said telescopic sleeve, a second transverse element connecting the longitudinal elements, a yoke pivotably mounted on said second transverse element, a guide pulley for the cable means carried by said yoke, and an articulated linking member cou-

pling said yoke to said telescopic sleeve and arranged to transmit to said sleeve the force exerted on the yoke by the tension



of said cable means such that, when the tension of said cable means exceeds a predetermined value the spring causes the yoke to pivot.

4,226,406

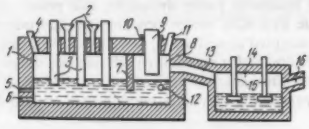
APPARATUS FOR THE COMPLEX CONTINUOUS PROCESSING OF POLYMETALLIC RAW MATERIALS

Jury F. Frolov, ulitsa Muranovskaya, 11, kv. 29, Moscow; Jury F. Piljukov, ulitsa Nemirovicha-Danchenko, 163, kv. 6, Novosibirsk; Vladimir S. Cherednichenko, ulitsa Zorge, 269, kv. 79, Novosibirsk; Gennady I. Orlov, ulitsa Vatutina, 27, kv. 20, Novosibirsk; Igor N. Kurapin, prospekt K. Marxa, 3, kv. 52, Novosibirsk; Roza I. Shabalina, ulitsa Udaltsova, 4, kv. 26, Moscow; Mark M. Lakernik, Strastnoi bulvar, 13a, kv. 32, Moscow; Alexandr F. Gavrilenko, Yaroslavskaya ulitsa, 1/9, kv. 71, Moscow; Anatoly A. Yakovenko, bulvar Rainisa, 14, korpus 2, kv. 73, Moscow; Alla K. Elkina, Ljuberetsky raion, poselok Kosino, ulitsa Polevaya, 11, Moskovskaya oblast; Anatoly I. Golovachev, Otkrytoe shosse, 6, korpus 4, kv. 48, Moscow; Tatyana S. Egorova, ulitsa Mescheryakova, 2, kv. 9, Moscow; Jury M. Vlasov, ulitsa Dosova, 12, kv. 52, Istra Moskovskoi oblasti, all of U.S.S.R.; Matvei Y. Smelyansky, deceased, late of Moscow, U.S.S.R., and by Faina S. Zelichenko, administator, Uralskaya ulitsa, 6, korpus 5, kv. 107, Moscow, U.S.S.R.

Division of Ser. No. 751,067, Dec. 16, 1976, Pat. No. 4,141,721. This application Dec. 8, 1978, Ser. No. 967,608

Int. Cl.[2] H05B *7/18*

U.S. Cl. 266—148 **4 Claims**



1. An apparatus for continuously processing complex, non-ferrous metallic compositions comprising a melting chamber for the melting of said compositions and accumulation of the corresponding metal oxides, said melting chamber being provided with means for charging non-ferrous metallic material which is heated to form a melt, and means for removing selected layers of the melt as they stratify according to their specific weights; a reducing-sublimating chamber communicating with said melting chamber to reduce and sublime the non-ferrous materials, said reducing-sublimating chamber also communicating with a gas duct and a chamber for condensation of the sublimated metal vapors, the lining of said reducing-sublimating chamber having at least one plasmatron built therein, said plasmatron having a nozzle permanently immersed in the melt adapted to inject thereinto a plasma jet capable of agitating and simultaneously reducing said melt, said reducing-sublimating chamber provided with means for charging coke on the surface of the melt also including an outlet for removing a melted slag, poor in non-ferrous metals.

4,226,407

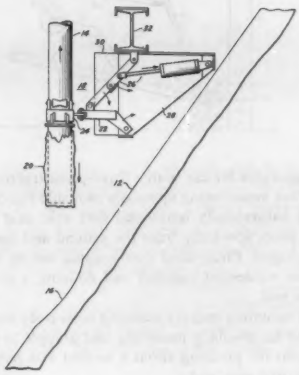
METALLURGICAL LANCE DESKULLER

Richard J. Reinbold, Allentown, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Mar. 26, 1979, Ser. No. 24,282

Int. Cl.[3] C21C *5/30, 5/32*

U.S. Cl. 266—226 **12 Claims**



1. In combination with a metallurgical lance and a metallurgical furnace an apparatus for removing a skull adhering to the metallurgical lance comprising

(a) positioning means secured to a supporting member,

(b) a main arm fixed to the positioning means,

(c) two jaw arms pivotally attached to the main arm,

(d) activating means mounted on the main arm for providing movement to each jaw arm to close the jaw arms about the lance,

(e) a guide roller rotatably mounted on each jaw arm in a position such that the guide rollers contact the surface of the lance when the jaw arms close about the lance, and

(f) a scraper blade attached to each jaw arm in a position on the jaw arms relative to the roller such that the scraper blade is spaced from the surface of the lance when the roller contacts the surface of the lance.

4,226,408

HYDRAULIC SHOCK ABSORBER FOR VEHICLES

Takao Tomita, Niiza, and Isamu Morita, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1979, Ser. No. 5,970

Claims priority, application Japan, Feb. 1, 1978, 53-10949[U]; Feb. 3, 1978, 53-12513[U]; Feb. 3, 1978, 53-12515[U]

Int. Cl.[2] F16F *9/08, 9/342*

U.S. Cl. 267—64 B **17 Claims**

1. A hydraulic shock absorber for vehicles, comprising:

an inner tube and an outer tube, said inner and outer tubes being telescopically fitted together;

a tapered rod supported by said outer tube and extending vertically and axially therefrom, the diameter of said tapered rod progressively decreasing from a proximal end thereof to a distal end thereof;

said inner tube including a partition member having a hole through which said tapered rod substantially loosely extends;

an orifice angularly defined between said rod and said hole and variable in response to relative movement of said rod and hole;

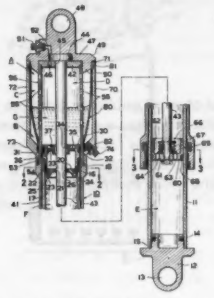
a piston provided on the distal end of said rod, and slidable with respect to said inner tube;

a lower chamber defined below said piston, and a central chamber defined above said piston and below said partition member;

said piston being provided with a valved portion adapted to open when said tubes relatively move in one direction to permit substantially full communication between said lower chamber and said central chamber, and adapted to operate to gain a damping force when said tubes relatively move in the opposite direction;

said piston including a spacer which spaces said valved portion from a lower surface of said partition member when they abut against each other;

a spacer member separate and distinct from said partition member disposed at an upper end of said inner tube and supported by said partition member for supporting



thereon means for breaking up air bubbles passing upwardly and downwardly through said spacer member;

a tubular holder coaxially disposed around an upper outer peripheral portion of said outer tube and having a diameter larger than the diameter of said outer tube;

a partition membrane substantially vertically disposed between said holder and said outer tube and mounted substantially coaxially therewith, said partition membrane being fabricated of a substantially flexible and resilient material and being disposed so as to divide a space defined between said holder and said outer tube into a high-pressure gas chamber outside of said membrane and a low-pressure gas chamber inside of said membrane; and

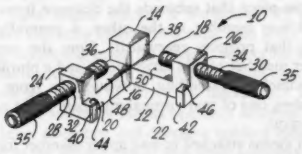
an upper portion of said outer tube being provided with a number of apertures through which said low-pressure chamber communicates with an upper space within said outer tube.

4,226,409

MULTIPLE CLAMP AND INDEXABLE ANVIL THEREFOR

Arthur W. Hanna, 9706 Wheatland Ave., Sunland, Calif. 91040

Filed Nov. 6, 1978, Ser. No. 957,888
Int. Cl.³ B25B *1/20*
U.S. Cl. 269—41 **7 Claims**



1. A clamping device comprising:

an L-shaped base including a pair of arms each having a generally flat upper surface for engaging a workpiece, said arms being disposed at a right angle to one another in a generally horizontal plane;

a fixed jaw upstanding from said base at the intersection of said arms, said jaw having a generally flat vertical clamping surface facing in the direction of each of said arms;

a screw supporting post upstanding from the distal end of each of said arms, each of said posts having a threaded aperture therethrough parallel to said arm and directed toward said fixed jaw;

a threaded screw received in each of said apertures and arranged to cooperate therewith for holding a workpiece against said fixed jaw; and

a supporting tab extending from each of said arms generally adjacent said screw supporting post and in a direction parallel to the other of said arms,

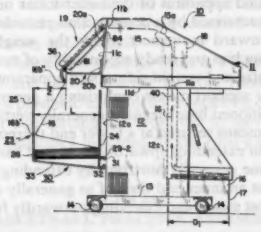
each of said screw supporting posts having a side surface that is coplanar with the clamping surface of said fixed jaw facing in the direction of the other of said arms, and each of said supporting tabs having an upper surface that is coplanar with the upper surface of the other of said arms, whereby said screw supporting post and said tab of one arm provide support and alignment for the workpiece held in the other of said arms.

4,226,410

STACKING SYSTEM FOR FANFOLD PAPER AND THE LIKE

Robert A. McIntosh, Sr., Nashua; Richard G. Bernier, Derry, both of N.H., and David A. Estabrooks, Andover, Mass., assignors to Centronics Data Computer Corporation, Hudson, N.H.

Filed Apr. 20, 1978, Ser. No. 898,418
Int. Cl.³ B65H *45/101*
U.S. Cl. 270—61 F **14 Claims**



1. Apparatus for fanfolding transversely perforated elongated sheets of material, comprising:

an inclined chute having a substantially flat upper surface over which the sheets pass from an upper end of said chute to a lower end thereof; and

a guide member having an elongated upper portion resting on said upper surface of said chute and a lower portion attached to said upper portion and terminating at a free end which extends beyond said lower end of said chute, said upper portion of said guide member being freely movable away from said upper surface of said chute in response to contact by a sheet passing between said guide member and said chute, said lower portion of said guide member being movable with said upper portion of said guide member, said free end of said lower portion of said guide member having a curved contour selected so that said guide member is generally concave relative to said lower end of said chute so as to temporarily impart a similar concave shape to the sheets after they pass said lower end of said chute, thereby facilitating the formation of inside folds in the sheets about the transverse perforations therein, said free end of said lower portion of said

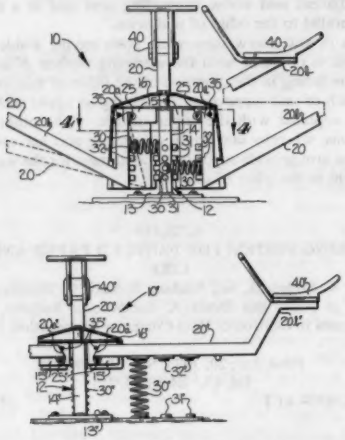
guide member having a resiliency selected so that said free end temporarily yields in response to contact by the sheets, thereby inhibiting the improper formation of outside folds in the sheets about the transverse perforations therein as a result of the concave shape imparted to the sheets by said free end.

4,226,411

PLAYGROUND APPARATUS

Ray G. Manus, Rte. 5, Box 104, Lincolnton, N.C. 28092

Filed Oct. 2, 1978, Ser. No. 947,492
Int. Cl.[3] A63G *11/00*
U.S. Cl. 272—55 10 Claims



1. Playground apparatus of the teeter-totter or seesaw type which is characterized by a construction providing for a freedom of downward movement under the weight of a rider against a spring bias and ready adjustability of such spring bias for different size and weight riders, said apparatus comprising:

a stationary support means comprising a generally horizontally positioned base means, a generally vertically extending post means secured at a lower end thereof to said base means and extending upwardly from said base means, and at least one generally horizontally extending support arm secured at an inner end thereof to generally an upper end of said post means and extending outwardly from said post means;

at least one movable rocker arm having a rider supporting unit secured to an outer end of said rocker arm for receiving a rider;

pivot means mounting said rocker arm on said support arm of said support means for freedom of generally up and down movement of said rocker arm and rider supporting unit without interference during such movement with said post means of said support means;

spring biasing means operatively positioned between said rocker arm and said support means for compressing and elongating during movement of said rocker arm and rider supporting unit under the weight of the rider; and

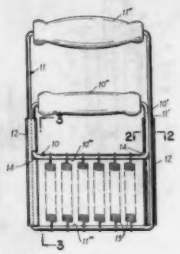
adjustment means for said spring biasing means comprising a plurality of separate, spaced-apart, serially-arranged means positioned along a portion of said rocker arm for individually, separately and releasably receiving and operatively positioning and retaining one end of said spring biasing means, and a plurality of separate, spaced-apart, serially-arranged means positioned along a portion of said stationary support means which is substantially parallel to the portion of said rocker arm having said spring positioning and retaining means thereon and positioned in opposed facing relationship to said spring positioning and retaining means on said rocker arm for individually, separately and releasably receiving and operatively positioning and retaining the other end of said spring biasing means, whereby, said spring biasing means may be selectively positioned and retained between separate mating pairs of respective spring positioning and retaining means on said rocker arm and said support means for adjusting said biasing means to increase or decrease the biasing force thereof for different size and weight riders.

4,226,412

HAND EXERCISER

Louis Panepinto, Hillsdale, N.J., assignor to AMF Incorporated, White Plains, N.Y.

Filed Sep. 16, 1977, Ser. No. 833,833
Int. Cl.[3] A63B *21/30*
U.S. Cl. 272—68 2 Claims



1. In a hand grip exerciser comprising a pair of parallel hand grips, and a pair of generally U-shaped members connected to the girps, one of the U-shaped members being shorter than and positioned within the other, and resilient means spanning the spaced bite portions of said U-shaped members; the improvement of a long sleeve surrounding both legs of said U-shaped members for about the total length of the legs of the shorter of said U-shaped members and in addition surrounding about the total length of that portion of the legs of the longer of the two members positioned between said spaced bite portions, and a slot in each of said sleeves at the juncture of the legs and bite of said shorter member.

4,226,413

WHEEL MOUNTED WALKER WITH FOOT PEDAL BRAKE

Wilma J. Daugherty, 9282 Chapman Ave., Garden Grove, Calif. 92641

Filed Nov. 8, 1978, Ser. No. 958,782
Int. Cl.[3] A61H *3/04*
U.S. Cl. 272—70.4 5 Claims

1. A walker for providing support for a person who is standing or walking comprising:

a rigid frame surrounding and defining a space in which said person can stand, said frame comprising a generally U-shaped horizontal lower member open at the rear, a generally U-shaped horizontal upper member open at the rear, a cross-piece that subtends the distance from one side of the lower member to the other, a generally horizontal strut that projects rearwardly from the center of said lower member to said cross-piece, and a plurality of vertical members extending downwardly from said upper member, one of said vertical members being connected to said strut;

support means attached to said upper member for supporting said person;

a pair of trailing wheels rotatably attached to said frame and disposed on opposite sides of said space;

a wheel bracket centered with respect to said trailing wheels

and disposed at the front of said space, said bracket including a substantially vertical shaft by which it is pivotably attached to said strut;

a lead wheel rotatably attached to said bracket; and

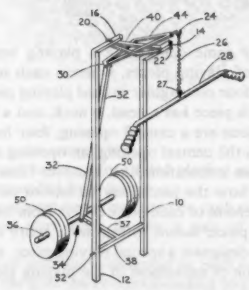
brake means for applying a braking force to said lead wheel, said brake means including a pedal for actuation thereof, said pedal extending from said wheel bracket beneath and past said cross-piece at a height that permits engagement thereof by the toe of said persons's foot without lifting the heel of said foot.

4,226,414

WEIGHT EXERCISE DEVICE

Matthew Coffaro, 4190 Sierra Chapita, Tucson, Ariz. 85715, and Ronald L. Pelton, 7402 E. Thirty-Eighth St., Tucson, Ariz. 85730

Filed Apr. 20, 1978, Ser. No. 898,091
Int. Cl.[3] A63B *23/00*
U.S. Cl. 272—117 **8 Claims**



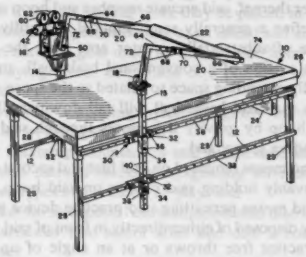
1. A weight exercise device comprising an interacting pair of normally unstable standing, upright, elongated and spaced apart parallel legs having at each of their top ends thereof attached at right angles thereto a horizontal leg extension means; a lever assembly having two ends, said lever assembly also defining transverse cross bar means, said cross bar means pivotally attached to said legs, said leg extension means receiving said cross bar means to provide a fulcrum for said lever assembly; weight assembly means operably attached to a first end of said lever assembly; and operator holding means operably attached to the second end of said lever assembly whereby the unstable standing legs achieve stability when the operator grasps and pulls the operator holding means and thereby causes interaction of the legs, lever assembly, weight assembly means, and operator holding means to perform exercises.

4,226,415

UNIVERSAL EXERCISE APPARATUS FOR PERFORMING HAMSTRING FLEX AND OTHER EXERCISES

Nathaniel Wright, 11247 Zorita Ct., San Diego, Calif. 92124

Filed May 14, 1979, Ser. No. 38,435
Int. Cl.[3] A63B *21/00*
U.S. Cl. 272—130 **8 Claims**



1. An exercise apparatus comprising

a table having a longitudinal dimension;

a set of rails disposed longitudinally on opposite sides of the table;

a set of posts on opposite sides of the table adjustable supported on the rails for longitudinal movement along the rails and for vertical movement extending above the rails;

means for securing the posts in a fixed position on the rails;

a rotary means supported on one of the posts for providing a predetermined constant resistance to rotary motion about its axis in a given direction;

a bearing supported on the post on the opposite side of the table from and axially aligned with the rotary means;

a pair of parallel arms respectfully coupled to the bearing and the rotary means; and

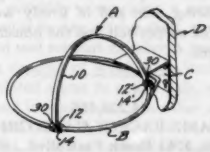
a cross bar coupled between the arms at a distance from the common axis of the bearing and the rotary means for enabling a person to exercise his muscles by contacting the cross bar and forcing the cross bar to move against the constant resistance provided by the rotary means.

4,226,416

BASKETBALL PRACTICE ASSEMBLY

Robert F. Callanan, 2359 Chestnut Ave., Long Beach, Calif. 90806

Filed Jun. 11, 1979, Ser. No. 47,286
Int. Cl.[3] A63B *63/08*
U.S. Cl. 273—1.5 A **4 Claims**



1. In combination with an elevated horizontal basketball hoop that extends forwardly from a vertical back board, a practice assembly that may be removably secured to said hoop to improve the accuracy of a user in arching a basketball through said hoop, said practice assembly including:

a. a dimensionally stable arcuate member of generally semi-elliptical shape that has first and second free ends that are

spaced from one another a distance substantially less than the interior diameter of said hoop;

b. first and second clamps of inverted U-shape transverse cross-section that may extend downwardly over circumferentially spaced sections of said hoop;

c. first means for permanently affixing said first and second free ends of said arcuate member to said first and second clamps in such a manner that said arcuate member extends upwardly above said hoop and inwardly towards the center thereof, said arcuate member and hoop cooperating to define a generally semi-elliptical upwardly extending space of substantially greater area than the transverse cross section of a conventional basketball, and said upwardly extending space so related to the space within said hoop that said basketball will fall downwardly through said hoop by gravity if it passes through said upwardly extending space; and

d. second means mounted on said first and second clamps for removably holding said clamps on said hoop, with said second means permitting said practice device to be selectively disposed of either directly in front of said backboard to practice free throws or at an angle of up to ninety degrees to the right or left thereof to practice side shots.

4,226,417

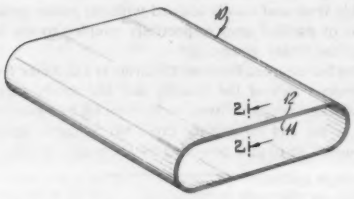
CARPET BELT

Thomas M. Camilleri, 277 Avenue W, Brooklyn, N.Y. 11223

Continuation-in-part of Ser. No. 712,182, Aug. 6, 1976, abandoned, which is a continuation-in-part of Ser. No. 594,194, Jul. 9, 1975, abandoned. This application Jun. 5, 1978, Ser. No. 912,391

Int. Cl.[3] A63D *5/02, 5/08*

U.S. Cl. 273—43 R **13 Claims**



1. In an automatic pinspotter machine having a carpet belt for conveying pins from the end of the lane to the pin elevator wheel and a motor to drive cylinders on which the carpet belt is mounted, the pin elevator wheel having a housing surface adjacent the carpet belt, the improvement wherein the pin contacting surface of the carpet belt comprises a soft, flexible, elastomeric material having a durometer hardness of from about 30 to about 75 capable of embedding therein a hard object without being torn and of firmly wedging the hard object between the carpet belt and the housing surface of the pin elevator wheel.

4,226,418

GAME RACKET HAND GRIP

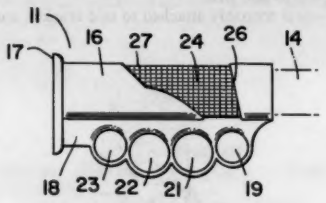
Ronald S. Balfour, 1061 Beach Park Blvd.,, #309 Foster City, Calif. 94404

Filed Nov. 20, 1978, Ser. No. 962,379

Int. Cl.[3] A63B *49/08*

U.S. Cl. 273—75 **8 Claims**

1. In a game racket which includes a racket head and a handle extending therefrom; a hand grip comprising a tubular member secured to the distal end of said handle in axial alignment therewith, a rigid web portion extending generally radially from said tubular member and extending longitudinally therealong, a plurality of finger receiving holes extending through said web portion and spaced longitudinally in closely



adjacent fashion, said holes being variably radially spaced from the axis of said tubular member.

4,226,419

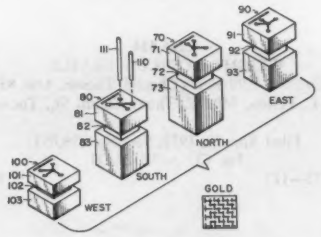
STRATEGY GAME

Neal R. Wooden, 515 Paumakua Pl., Kailua, Hi. 96734

Filed Sep. 5, 1978, Ser. No. 939,823

Int. Cl.[2] A63F *3/02*

U.S. Cl. 273—260 **6 Claims**



1. A strategy game comprising a playing board with 64 squares, 2 sets of playing pieces, wherein each set of playing pieces includes four rectangular shaped playing pieces of varying heights, each piece has a head, a neck, and a body, in the head of each piece are a central opening, four lines radiating outwardly from the central opening, an opening at the end of each line, and an orientation line, the four lines are vectors which indicate how the piece may be moved on the playing board, the movement of each piece differs from the movement of every other piece, means to register a score on a playing piece, means to designate a special playing piece, and means to mark a restriction of movement of the playing pieces.

4,226,420

BINGO GAME FOR THE NON-BRAILLE BLIND

Dorothy L. Corday, 48 Gilbert Ct., Wilmington, Del. 19713

Filed Jul. 30, 1979, Ser. No. 61,654

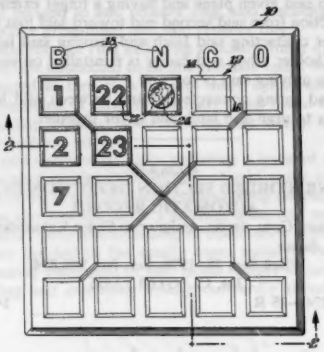
Int. Cl.[3] A63F *3/00*

U.S. Cl. 273—269 **4 Claims**

1. A bingo game apparatus for the blind comprising:

(a) A players' board having spaced positions outlined by ridges and within the positions raised numbers wherein the raised numbers consist of tactile material in the form of either hooked nap or looped nap;

(b) A marker piece having cooperating looped nap or hooked nap adapted to attach to the tactile material which



forms the raised numbers whereby non-braille blind people may participate in playing bingo.

4,226,421

BRIDGE-LINKING TABLE GAME

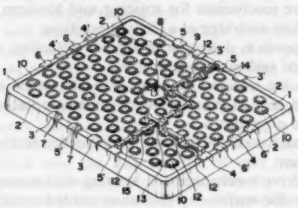
Takeshi Shimizu, Yashioshi, Japan, assignor to Kabushikikaisha Anoa, Tokyo, Japan

Filed Dec. 14, 1978, Ser. No. 969,326

Claims priority, application Japan, Aug. 28, 1978, 53-116686[U]

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—275 **3 Claims**



1. A table game comprising:

a game board having a four sided playing area, said playing area surrounded by a frame;

a plurality of start marks mounted on each side of the frame, each said start mark having a pair of holes disposed therein;

a plurality of goal marks mounted on each side of the frame, each of the goal marks corresponding to a start mark with corresponding goal and start marks mounted in alignment on opposite sides of the frame, and each said goal mark having a pair of holes disposed therein;

a plurality of islands each having a center, mounted in rows on the base inside the frame, with said centers aligned and said centers spaced equal distances apart,

each said island having four pairs of holes disposed therin,

each said pair of holes disposed on a side of a square having a center coincident with the center of the island, such that a fixed distance between two adjacent pairs of holes disposed on any adjacent islands is the same,

a plurality which is less than all of said rows including and in alignment with corresponding goal and start marks,

said islands in said plurality of rows being disposed inside said frame such that a distance from a pair of holes on any start mark or goal mark to an adjacent pair of holes on an adjacent island in a same row as said start mark or goal is equal to said fixed distance;

a plurality of playing pieces each having a length such that said playing pieces may be placed to connect adjacent islands in a same row and to connect a goal mark or a start mark to an adjacent island,

each said playing piece having a bottom from which four spaced pegs extend downwardly, said pegs being of a diameter receivable by said holes in said islands and said start and goal marks, said pegs disposed on said pieces such that each playing piece may be placed in said holes to connect adjacent islands or an island and an adjacent start mark or goal mark by at least one fixed distance,

said playing pieces comprised of a plurality of different types;

an upwardly extending pylon integrally mounted at a center of said game board;

a disc rotatably mounted on said pylon, said disc having sectors marked thereon designating different playing piece types and a mode of play; and

a marker on said game board adjacent said disc to indicate a particular disc sector after said disc is rotated by a player.

4,226,422

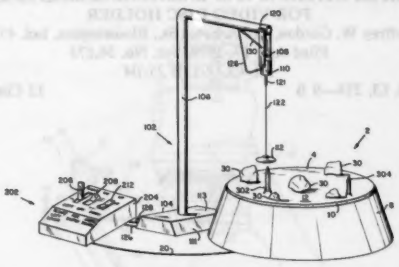
FLYING SAUCER SIMULATION GAME

John A. Belli, 75 Elizabeth St., Fitchburg, Mass. 01420

Filed Jul. 13, 1978, Ser. No. 924,134

Int. Cl.³ A63F *9/00*

U.S. Cl. 273—368 **11 Claims**



9. A game device comprising:

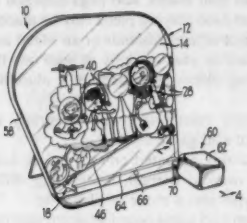
(a) a support assembly comprising a support member, a reversible motor having a drive shaft, means for attaching said motor to said support member, a symmetrical object, and a string capable of winding on itself when one end thereof is rotated about its center axis, one of said string being attached to said object, the other end of said string being attached coaxially to said drive shaft, said motor being adapted to rotate said drive shaft fast enough to cause said string to wind on itself and raise said object vertically toward said motor when said motor is energized while oriented so that said drive shaft extends vertically downward toward said object; and

(b) means for selectively energizing said motor, said means including switch means for energizing said reversible motor so as to cause said reversible motor to rotate said shaft in one direction or the other.

4,226,423
GAME HAVING ILLUSTRATION-BEARING PROJECTILE

Donald F. Nix, Hanover Park, and Howard J. Morrison, Deerfield, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 9, 1979, Ser. No. 10,800
Int. Cl.[3] A63F 7/02
U.S. Cl. 273—397 12 Claims

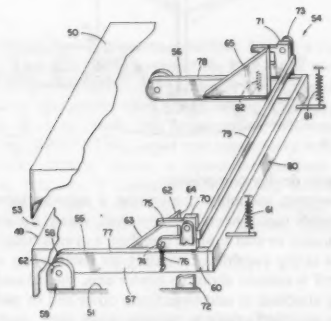


1. A game apparatus, comprising:
a housing;
means defining a front playing surface wall and a projectile receiving station disposed therebehind, said front playing surface wall bearing an incomplete illustration and having a missing portion of said illustration;
a projectile bearing an illustration capable of completing the missing portion of the illustration on said front playing surface wall when projected into said projectile receiving station;
means for orienting the illustration on said projectile with respect to the illustration on said front wall; and
launching means for launching said illustration bearing projectile into said projectile receiving station.

4,226,424
PLAYER LATCHING AND UNLATCHING MECHANISM FOR VIDEO DISC HOLDER

Geoffrey W. Gordon, 314 Arbutus St., Bloomington, Ind. 47401

Filed Apr. 27, 1979, Ser. No. 34,173
Int. Cl.[3] G11B 25/04
U.S. Cl. 274—9 B 12 Claims

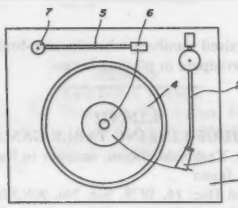


7. A latch mechanism for operation with a holder in a caddy comprising:
a frame;
a first latch having a first end and a second end with said first end pivotally mounted to said frame, said latch having a wedge-shaped hook extending upwardly therefrom in a direction from said first end toward said second end to engage said holder;
first spring means mounted on said frame and connected to said second end to urge said hook upwardly in a given plane;
a first pryor pivotally mounted to said frame to move parallel to said given plane and having a finger extending in a direction from said second end toward said first end, said pryor contacting said latch and moving said latch from said holder when said caddy is reinstalled on said holder while moving said pryor; and
a second spring connected to and between said latch and pryor to urge said latch and pryor together.

4,226,425
NONRECORDED SECTION DETECTION IN AN AUTOMATIC RECORD

Hiromi Juso, Gose, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 28, 1978, Ser. No. 946,854
Int. Cl.[3] G11B 17/06
U.S. Cl. 274—15 R 14 Claims



1. An automatic record player comprising:
a tonearm;
a pickup cartridge mounted on a tonearm;
a first drive mechanism for rotating said tonearm to place said pickup cartridge at a desired position;
cartridge position detection means for detecting a current address of said pickup cartridge;
a nonrecorded section detection sensor for detecting a nonrecorded section provided between two adjacent tracks recorded on a disc;
a sensor arm for supporting said nonrecorded section detection sensor;
a second drive mechanism for rotating said sensor arm to scan the disc surface by said nonrecorded section detection sensor;
a nonrecorded section position information storing means for storing an address of said nonrecorded section detected by said nonrecorded section detection sensor; and
adjusting means for adjusting the initial contents of said nonrecorded section position information storing means.

4,226,426
SEMI-UNITIZED SHAFT SEAL

Edward J. Messenger, Longview, Tex., assignor to Garlock Inc., Longview, Tex.

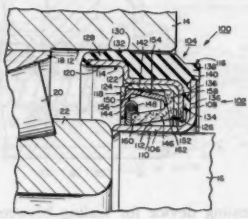
Continuation-in-part of Ser. No. 664,625, Mar. 8, 1976. This application Feb. 26, 1979, Ser. No. 14,926
Int. Cl.[3] F16J 15/32; B16D 53/00
U.S. Cl. 277—37 18 Claims

1. A two-part, separable, semi-unitized shaft seal for providing a seal between a housing bore and a relatively rotatable shaft extending through the bore, said seal comprising:
(a) a wear sleeve including a radially inner cylindrical portion and a radial flange extending radially outwardly from the axially outer end of said cylindrical portion, said cylindrical portion having an I.D. adapted to press fit onto a shaft and having an O.D. wear surface for the below-recited sealing lip; and
(b) a sealing member movable axially onto and off of said

wear sleeve and assembled onto said wear sleeve in separable, semi-unitized relationship relative thereto, said sealing member including a retainer ring, an elastomeric body bonded to said retainer ring, and a sealing element cartridge press-fitted into said retainer ring,

(1) said retainer ring including a radially outer cylindrical portion connected to an intermediate radial flange connected in turn to a radially inner cylindrical portion connected in turn to a radially inner radial flange extending radially inwardly from one end of said inner cylindrical portion,

(2) said elastomeric body including a layer of elastomer bonded to the O.D. surface of said outer cylindrical portion of said retainer ring and being adapted to form an interference fit in a housing bore, and said elastomeric body also including an elastomeric bumper member bonded to the axially outer radial surface of the axially outermost of said radial flanges of said retainer ring and extending axially outwardly therefrom into



contact with the axially inner radial surface of said radial flange of said wear sleeve, for axially locating said sealing member relative to said wear sleeve and for aiding in preventing dirt from passing inwardly to the below-recited sealing lip,

(3) said sealing element cartridge comprising a radially outer case, a radially inner case, locked inside said outer case by crimping and a leather sealing element locked between said outer and inner cases and having a sealing lip in sealing contact with said O.D. wear surface of said wear sleeve, said outer case having a radially outer cylindrical portion having an O.D. surface that is press-fitted into the I.D. surface of said inner cylindrical portion of said retainer ring, whereby

said sealing member is movable axially, with respect to said wear sleeve, away from and out of contact with said wear sleeve and with said sealing lip being slidable axially off of said O.D. wear surface, for disassembling said two part separable, semi-unitized shaft seal.

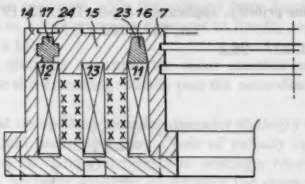
4,226,427

MAGNETIC-CONTROL CLOSURE SYSTEM

Claude Duquenne, La Garenne, and Andre Mondy, Asnieres, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.), Paris, France

Filed Jan. 9, 1979, Ser. No. 2,018
Claims priority, application France, Jan. 12, 1978, 78 01299
Int. Cl.[2] F16J *15/34*
U.S. Cl. 277—80 **7 Claims**

1. A magnetic-control closure system for the rotor of a rotating machine which transports a noxious fluid, constituted by an annular seal located in a plane at right angles to the axis of rotation of the machine, said seal being clamped in the active position thereof between on the one hand stationary knife-edges formed on the rotor for this purpose and on the other hand movable knife-edges carried by an annular support member which is capable of moving along the axis of the machine, in which the movable support member moves under the action of a magnetic attraction system between an inactive position in which said member is separated from the rotor and an active position in which said member is coupled with said rotor under the action of magnetic attraction forces, the magnetic attraction system being such as to have an external portion defining a face which can be coupled with the rotor under the action of



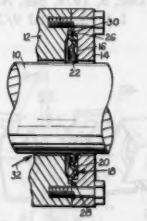
the magnetic attraction forces, wherein said external portion of the magnetic attraction system is uniformly constructed of magnetic material and comprises at least one annular portion of small thickness which defines a magnetic shunt having high reluctance.

4,226,428

FLEXIBLE SEAL AND GROOVE ASSEMBLY

George J. Paptzun, 14655 NW. West Union Rd., Portland, Oreg. 97229

Filed Jul. 13, 1978, Ser. No. 924,168
Int. Cl.[2] F16J *15/36*
U.S. Cl. 277—94 **13 Claims**



1. A seal and groove assembly in combination with a pair of members to be sealed against the movement of fluid therebetween, said assembly comprising

(a) a lateral groove in one of said members having defining side and bottom walls and having an opening directed toward said other member,

(b) a flexible seal having opposite ends,

(c) said seal being mounted in said groove and having one seal end portion thereof projecting through said opening for end sealing engagement with said other member,

(d) said seal having a sinuous-like portion between its ends arranged to be flexed toward a straightened condition upon being subjected to a pressurized fluid to cause said one seal end portion to forcefully seal against said other member,

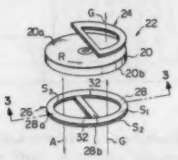
(e) and at least one longitudinally extending fluid escape port in said enlarged head to drain any trapped downstream fluid.

4,226,429

FLUID SEAL FOR USE IN ROTARY REGENERATOR

Hideo Sato, and Osamu Kobayashi, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 13, 1978, Ser. No. 969,033
Claims priority, application Japan, Dec. 15, 1977, 52/151028
Int. Cl.[3] F16J *15/34*
U.S. Cl. 277—96.2 17 Claims



1. A rubbing contact fluid seal for use on the hot side in the rotary regenerator portion of a gas turbine engine, which portion includes a rotatable annular matrix, said seal comprising:

a seal member made of carbon base material, said seal member having first and second surfaces, said first surface being contactable with the rotatable radial face on the hot side of said rotatable annular matrix, said second surface being directly contactable with hot exhaust gases before they pass through the matrix and with hot intake air after it passes through the matrix; and

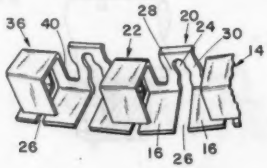
a heat-resistant layer formed on said second surface, allowing the major part of said first surface of carbon base material to be exposed as it is for rubbing contact with the hot side radial face of the rotatable annular matrix.

4,226,430

TWO-PIECE OIL CONTROL RING

Kenneth J. Nisper, Muskegon, Mich., assignor to Muskegon Piston Ring Company, Muskegon, Mich.

Filed Dec. 5, 1978, Ser. No. 966,768
Int. Cl.[3] F16J *9/20*
U.S. Cl. 277—139 11 Claims



1. A spacer-expander adapted for use with a parted rail ring and including an integral cylinder wall engaging lower rail, comprising:

a plurality of circumferentially spaced segments defining said lower rail;

a plurality of circumferentially spaced legs, said legs being divided into pairs with one leg of each pair extending axially from one segment and the other leg of the pair extending axially from the next adjacent segment;

a plurality of webs, each web interconnecting the legs at their axial top edges and defining therewith a plurality of spring members; and

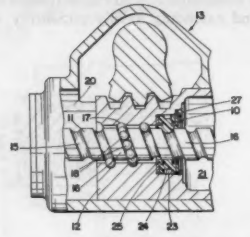
a plurality of L-shaped in section members interconnecting the legs of the remaining pairs of legs, said members each including a solid radially outwardly extending portion defining a rail seat adapted to support the parted rail ring and a solid axially and downwardly extending portion defining a pressure leg terminating in closely spaced relationship and axially above a pair of adjacent segments and dimensioned to permit limited flexing of said segments, whereby the radial tension exerted on the rail ring is greater than the radial tension exerted on the spaced segments defining the lower rail.

4,226,431

SEALING DEVICE FOR SCREW THREADS

Jerry G. Jelinek, La Habra, and Orville J. Bain, Van Nuys, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 884,862, Mar. 9, 1978, Pat. No. 4,159,118. This application Oct. 30, 1978, Ser. No. 955,996
Int. Cl.[3] F16J *15/16;* F16H *55/22*
U.S. Cl. 277—165 13 Claims



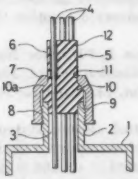
1. A sealing device for sealing between first and second telescoped parts, said device comprising an annular elastomeric member having inner and outer peripheral surfaces, said inner peripheral surface being arranged for sealing engagement with one of said parts and including an axially extending sealing surface and a radially inwardly extending sealing projection, said sealing projection extending through an arc of predetermined circumferential extent, a relatively rigid axially extending support disposed in radially outward alignment with said axially extending sealing surface, said support being discontinued for a predetermined circumferential extent at a location in radially outward alignment with said projection, and said circumferential extent of said discontinuity being substantially as great as said circumferential extent of said sealing projection.

4,226,432

DEVICE FOR SEALING ELECTRIC WIRES

Keiichi Nakamizo, Himeji, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Jan. 22, 1979, Ser. No. 5,136
Claims priority, application Japan, Jan. 31, 1978, 53-10887[U]
Int. Cl.[3] F16J *15/10*
U.S. Cl. 277—212 F 6 Claims



4. A sealing member for sealing electric wires and adapted to be used with a cap screw having a hole therethrough, said sealing member being relatively flexible and elastic and having therein axial bores through which the wires are adapted to extend, said sealing member including a base portion and an extension portion extending from said base portion, each of

said bores extending through both said base portion and said extension portion,

each of said bores having a small diameter portion in said base portion for tightly receiving a portion of a wire of given diameter and each of said bores having a larger diameter portion in said extension portion for loosely receiving another portion of such wire, and said small and larger diameter portions of said bores being interconnected by a conical wall portion of said bores.

4,226,433

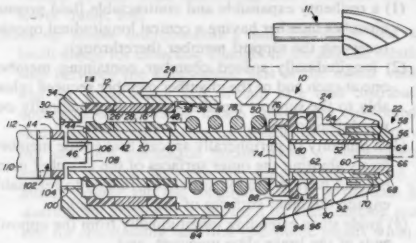
QUICK CHANGE TOOL HOLDER

Josef J. Dancsik, 37970 Pointe Rosa, Mt. Clemens, Mich. 48045

Filed Feb. 26, 1979, Ser. No. 15,328

Int. Cl.³ B23B *31/10*

U.S. Cl. 279—51 **2 Claims**



1. A quick change tool holder comprising:

a stationary housing;

a quill rotatably supported by the housing;

a collet rotatingly engaged by the quill;

the collet adapted to releasingly engage a tool while rotating;

the housing comprising an inner end and an outer end, a central bore beginning at the outer end, said bore terminating at a bottom wall, a through bore of reduced diameter through the bottom wall forming a shoulder;

a pair of spaced apart bearings held in spaced relationship by a sleeve, supported by the central bore, a first bearing outer race abutting the shoulder at an inner end, a retaining ring abutting a second bearing outer race at an outer end, said retaining ring engaging a groove in the central bore to longitudinally position said spaced apart bearings within the housing;

the quill comprising a tubular member including an inner end, an outer end, an outer diameter and a longitudinal bore, said outer diameter engaging a bore of the spaced apart bearings, a retaining ring abutting an inner end of an inner race of said first bearing, a groove in the outer diameter spaced from the inner end thereof to engage said retaining ring, a raised diameter shoulder integral with the tubular member, an inner wall of the raised diameter shoulder engaging an outer end of an inner race of said second bearing to longitudinally position the quill, a transverse slot spaced longitudinally toward the outer end from the raised diameter shoulder, an enlarged bore at the outer end of said quill, and a threaded portion along the outer diameter of the quill extending inward a distance from the outer end;

the collet comprising an inner member and an outer member, the inner member having a diameter slidingly engagable with the longitudinal bore, a tool engaging bore extending inward from an outer end, an enlarged bore extending longitudinally from an inner end thereof to the tool engaging bore, one or more tool engaging segments formed by a plurality of longitudinal slits extending from the outer end of the inner member along the tool engaging diameter and along the enlarged diameter a distance terminating short of an inner end thereof, the segments biased outward forming an enlarged tool engaging bore, the segments including a tapered outer end, said outer member comprising a threaded bore extending along the inner end thereof to threadingly engage the quill threaded portion, a tapered bore at the outer end thereof complementary to the tapered end, whereby longitudinal movement of the inner member toward the outer end engages the tapered outer end of the segments with the tapered bore biasing the segments to a tool engaging diameter to fixedly engage a shank of a tool;

a cross-pin slidingly engaging the inner member and the transverse slot extending radially past the outer diameter a distance;

a spring seat comprising an inner diameter slidingly engaging the quill outer diameter, a pair of radially opposed slots along an outer end thereof to nestingly receive the cross-pin, an outer diameter enveloping the cross-pin, an inner end engaging an outer end of a spring;

said spring slidingly enveloping the quill outer diameter, an inner end thereof abutting an outer face of the raised diameter shoulder, and the outer end thereof biased against said spring seat; and

the spring seat abutting the cross-pin whereby the spring biasing force is transmitted to the inner member biasing the tapered end longitudinally outward against the tapered bore, and biasing the segments and the engaging diameter radially inward to engage the shank of the tool.

4,226,434

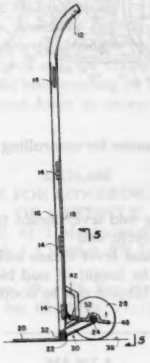
HAND TRUCK

Benjamin J. Hill, 12115 E. 21st Ct., Tulsa, Okla. 74129, and Norman L. Wagnon, 8511 E. 122nd St. S., Bixby, Okla. 74008

Filed Aug. 21, 1978, Ser. No. 935,331

Int. Cl.² B62B *1/12*

U.S. Cl. 280—47.21 **1 Claim**



1. A hand truck for lifting and moving heavy objects on a floor surface;

a frame having spaced apart handles at the upper end, and having a forward and rearward surface;

a toe plate affixed to the lower end of and extending generally normal of the forward surface of said frame, the toe plate and frame rearward surface forming a pivot junction, the toe plate being adapted to be positioned under an object to be lifted and moved, the pivot junction non-slidably engaging the floor surface when said frame is pivoted rearwardly;

a pair of spaced apart wheels rotatably supported by an axle;

axle arm means affixed to said axle at the outer end and pivotally affixed at the inner end to said frame rearward surface adjacent and above said pivot junction whereby said wheels are pivotally supported to said frame, the axle

always being parallel said pivot junction, the wheels thereby always remaining on the floor surface;

support brackets affixed to and extending rearwardly from said frame rearward surface above said pivot junction, said axle engaging the support brackets when said frame is pivoted rearwardly sufficient to pivot said toe plate about said pivot junction at least 15° and not more than 35° relative to the floor surface, whereby further rotation of said frame serves to lift said pivot junction and thereby a load supported on said toe plate off the floor surface; and

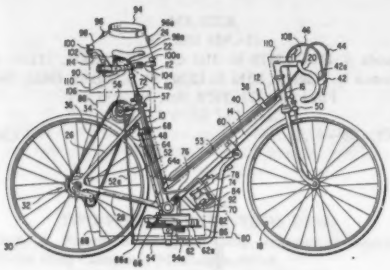
a gravitationally actuated catch arm pivotally attached to said frame rearward surface at its inner end above said axle arm, the catch arm outer end having an upwardly extending integral U-shaped hook portion which slidably receives said axle when said frame is in an upright position, said hook portion being disengageable from said axle by upward pivotal movement of the catch arm outer end, said catch arm sliding on said axle when said frame is pivoted rearwardly.

4,226,435

BICYCLE SEAT ADJUSTABLE DURING RIDE

Boris Efros, 920 N. Stanley Ave., Los Angeles, Calif. 90046

Division of Ser. No. 774,620, Mar. 4, 1977, Pat. No. 4,161,328.
This application Apr. 23, 1979, Ser. No. 32,645
Int. Cl.³ B62K *19/36, 23/08*
U.S. Cl. 280—283 **13 Claims**



9. A control mechanism for controlling the height of a bicycle seat, comprising:

a seat;

lever means;

means for coupling said lever means to at least one of the pedals of said bicycle; and

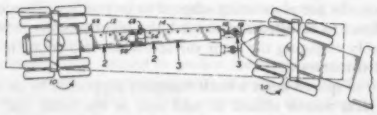
means coupled to said lever means and to said bicycle seat for controlling the height of said bicycle seat, whereby said seat of said bicycle can be controlled by the foot of the rider.

4,226,436

APPLICATION FOR LOCKING DEVICE FOR TELESCOPING REACHES OF LOGGING TRAILERS

Jack D. Donaldson, 134 Beville Rd., Chehalis, Wash. 98532

Filed Jul. 24, 1978, Ser. No. 927,728
Int. Cl.³ B62D *53/00*
U.S. Cl. 280—404 **5 Claims**



1. In combination with the elongated inner and outer hollow telescoping reaches of the trailer of a logging truck-trailer combination, wherein the outer cross sectional dimensions of the inner reach are slightly smaller than the inner cross sectional dimensions of the outer reach, a device for securing said telescoping reaches together releasably against longitudinal displacement, comprising:

(a)a transverse plate secured to and extending across the inner reach adjacent the inner end thereof,

(b) an elongated support member secured at one end to the transverse plate and extending therefrom in the direction and on the longitudinal axis of the inner end of the inner reach,

(c) laterally expansible and contractable friction means having a central longitudinal opening receiving the support member therethrough, the friction means including gripping means disposed for releasable engagement with the inner side walls of the outer reach, the friction means comprising

(1) a resilienty expansible and contractable fluid pressure chamber member having a central longitudinal opening receiving the support member therethrough,

(2) longitudinally spaced chamber containing members one at each end of the chamber member secured releasably to the support member against longitudinally outward displacement,

(3) a plurality of peripherally spaced brake shoe members freely abutting the outer surfaces of the chamber member and having friction surfaces arranged to releasably engage the inner surfaces of the outer reach,

(4) guide studs extending longitudinally from the opposite ends of the brake shoe members, and

(5) guide slots in the chamber containing members freely receiving and guiding the guide studs therein,

(d) connecting means securing the friction means to the support member whereby expansion and contraction of the gripping means locks the inner and outer reaches together releasably against relative longitudinal movement, and

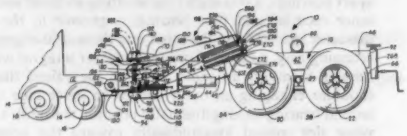
(e) operating means connected to the friction means for expanding and contracting the gripping means from a remote station.

4,226,437

AXLE-LOAD DISTRIBUTING APPARATUS

Curtis A. Trudeau, Elk Point, S. Dak., assignor to CMI Corporation, Oklahoma City, Okla.

Filed Aug. 6, 1979, Ser. No. 63,909
Int. Cl.³ B62D *61/12*
U.S. Cl. 280—405 R **40 Claims**



1. An axle load-distributing apparatus for a vehicle having a frame mounted on wheel supported axles, said axle load-distributing apparatus comprising:

a lower frame having a forward end and an opposed rearward end;

at least one transverse load distributing axle mounted on said lower frame;

a plurality of wheels bearingly mounted on said axle;

hitch means pivotably connected to the forward end of said lower frame for connecting said lower frame to the motor vehicle and for providing said lower frame with a horizontal lateral swinging movement and a vertical movement with respect to said hitch means;

a cantilever having a forward end and an upwardly inclined

rearward end, the forward end of said cantilever being rigidly mounted to said hitch means for preventing vertical movement of said cantilever with respect to said hitch means and the forward end of said cantilever being pivotably connected to said hitch means for providing a horizontal lateral swinging movement of said cantilever with respect to said hitch means, the upwardly inclined rearward end of said cantilever extending upwardly over said lower frame means in a spaced relationship with said lower frame means;

first pneumatic means operatively disposed between the rearward end of said cantilever and said lower frame so that in an activated position said first pneumatic means causes a downward force to be applied to said lower frame transferring a portion of the load on the rear axles of the vehicle to said load-distributing axle mounted on said lower frame; and

tracking means interconnecting said cantilever and said hitch means for detecting changes in the angular relationship between the longitudinal axis of the motor vehicle and the longitudinal axis of said axle load distributing apparatus, said tracking means operatively connected to said first pneumatic means for at least partially deactivating said first pneumatic means when a predetermined angular relation between the longitudinal axis of the motor vehicle and the longitudinal axis of the axle load distributing apparatus is detected by said tracking means and for reactivating said first pneumatic means when the axle load distributing apparatus returns to a normal tracking position.

4,226,438

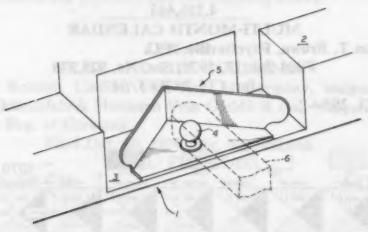
TRAILER HITCH GUIDE

Walter L. Collins, 10225 A. Synott Rd., Sugarland, Tex. 77478

Filed Jan. 11, 1979, Ser. No. 2,697

Int. Cl.[2] B60D *1/00*

U.S. Cl. 280—477 **7 Claims**



1. A trailer hitch assembly for a draft vehicle comprising

a draft member adapted to be supported at the rear end of said vehicle,

a ball connector member supported in an upright position on said draft member and rigidly secured thereon,

a guide member supported on said draft member and surrounding said ball connector member on the sides and rear thereof and having sidewalls positioned to guide a trailer hitch member into centered relation relative to said ball connector member during assembly of the hitch connection, and

said guide member comprising a unitary piece having a base plate and a pair of upstanding sidewalls,

said sidewalls each forming a right dihedral angle with said base plate, and said sidewalls meeting at a point rearward of said ball connector member in an obtuse dihedral angle,

the ends of said sidewalls extending forwardly of said ball connector member and having curved end edges having a curved relieved portion permitting greater angular movement of the hitch.

4,226,439

SAFETY SKI-BINDINGS

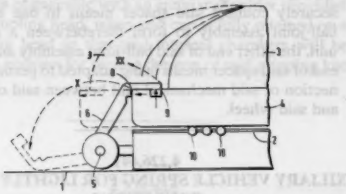
Bernhard Kirsch, Im LItzelholz 23, 5500 Trier-Biewer, Fed. Rep. of Germany

Filed Jun. 26, 1978, Ser. No. 919,180

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1977, 2728917; Jun. 27, 1977, 2728918; Dec. 31, 1977, 2759144; Dec. 31, 1977, 2759145

Int. Cl.[2] A63C *9/08*

U.S. Cl. 280—628 **57 Claims**



1. In a safety ski binding for releasably holding a ski boot on a ski, a heel binding normally holding the heel portion of the ski boot on the ski, and a front binding including:

toe clamp means having a first portion engageable with the toe portion of the ski boot for normally deterring forward movement of the ski boot lengthwise of the ski;

pivot means mounting said toe clamp means for swinging about an axis extending generally transversely of the ski and below the plane of the bottom of the ski boot sole between a boot-securing position in which said toe clamp means hold the toe portion of the ski boot in predetermined position relative to the ski and a released position in which said toe clamp means free the toe portion of the ski boot from the ski enabling substantial forward sliding movement of the ski boot along the ski; and

locking means for normally maintaining said toe clamp means in boot-securing position but automatically shiftable for swinging of said toe clamp means into released position by the ski boot exerting on said toe clamp means a forward directed force in excess of a predetermined force.

4,226,440

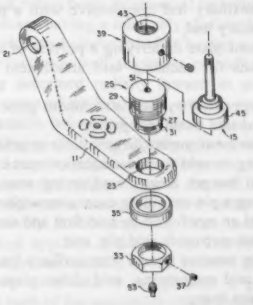
ADAPTER DEVICE FOR LOWERING THE FRONT END OF A VEHICLE

Thurman P. Chappell, 6171 Montgomery Pl., San Jose, Calif. 95135, and Fredrick J. Chantler, 671 La Sierra Way, Gilroy, Calif. 95020

Filed Nov. 29, 1978, Ser. No. 964,648

Int. Cl.[3] B60G *11/14*

U.S. Cl. 280—660 **4 Claims**



1. An adapter device for integral incorporation into the front

suspension of a motor vehicle to lower the front end of said motor vehicle with respect to the road, said motor vehicle being of the type employing a control arm pivotally connected at its inner end to the frame of the vehicle and pivotally connected at its outer end to a front wheel of said vehicle by means of a ball-joint assembly extending therebetween; said adapter device comprising:

a spacer means, for mechanical interposition in series with said ball-joint assembly between said control arm and said wheel, to lower said control arm with respect to said wheel, fastening means on one end of said spacer means to securely connect said spacer means to one end of said ball-joint assembly to form therebetween a mechanical unit, the other end of said ball-joint assembly and the other end of said spacer means being adapted to permit interconnection of said mechanical unit between said control arm and said wheel.

4,226,441

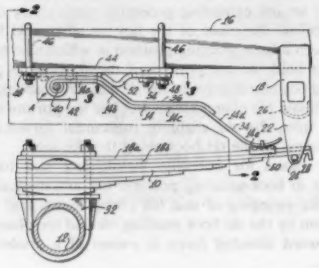
AUXILIARY VEHICLE SPRING FOR LIGHTLY LOADED CONDITIONS

Albert J. Lampert, San Clemente, Calif., assignor to Cambria Spring Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 783,661, Apr. 1, 1977, Pat. No. 4,175,772. This application Mar. 30, 1978, Ser. No. 891,847

Int. Cl.[3] B60G *11/04*

U.S. Cl. 280—718 **3 Claims**



1. A suspension system for a vehicle comprising:

a main leaf sring connected to at least one axle of said vehicle;

hanger means attached to said vehicle for retaining said mainspring while permitting vertical travel thereof within a predetermined range;

an auxiliary spring disposed between said frame and said mainspring to downwardly bias said mainspring toward the lower limit of said range of travel, said auxiliary spring comprising a first auxiliary leaf extending continuously along and beneath said frame toward said hanger and a second auxiliary leaf coextensive with a portion of said first auxiliary leaf;

an attachment plate underlying a portion of said frame;

clamp means for securing said attachment plate to said frame;

a spacer supported by said attachment plate between said frame and said auxiliary spring;

spring securement means for pivotally attaching said auxiliary spring to said frame at location spaced horizontally from said hanger means, said spring securement means comprising a pin extending crosswise with respect to said frame and an eye found by said first and second auxiliary leaves that surrounds said pin; and

a slider plate secured to said first auxiliary leaf that slidably engages said mainspring, said slider plate including an anti-friction liner;

said auxiliary spring having a spring rate substantially lower than that of said mainspring, whereby said vehicle rides on said auxiliary spring when lightly loaded but rides on said mainspring when heavily loaded.

4,226,442

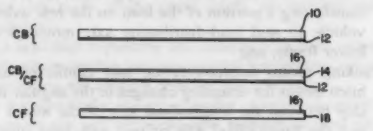
WATER INSENSITIVE IMAGE RECEPTOR COATING

Gene D. Carlson, Ankeng, and Gerry H. Ehrhardt, Des Moines, both of Iowa, assignors to Frye Copysystems, Inc., Des Moines, Iowa

Filed Apr. 27, 1979, Ser. No. 34,029

Int. Cl.[3] B41M *5/22*

U.S. Cl. 282—27.5 **3 Claims**



1. A pressure responsive receptor sheet for chemical type transfer media adapted to produce a moisture insensitive transferred image comprising

planar sheet material having a nontransferable image receptor coating layer disposed on one surface thereof,

said nontransferable image receptor coating layer comprising the solid residue of an applied homogenous liquid mixture of an evaporable liquid carrier, a hydrophobic resinous binder material selected from the group consisting of polyvinyl butyral, polyvinylacetal and polyvinyl formal, opacifier-filler material and organic dyestuff dye precursor chromogenic reagent material distributed therewithin.

4,226,443

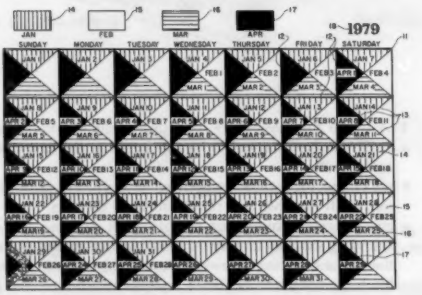
MULTI-MONTH CALENDAR

William T. Brown, Fayetteville, N.C.

Filed Jul. 17, 1978, Ser. No. 925,278

Int. Cl.[2] B42D *5/04*

U.S. Cl. 283—2 **6 Claims**

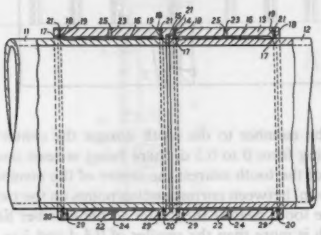


1. An improved calendar comprising: a plurality of day blocks arranged in rows seven across and five down to give a total of thirty-five blocks within the confines of a rectangular space; at least two different colored date divisions within each day block, each of said color division of each day block being substantially identical to a color division in each of the other day blocks; and equa-sized numeral indicia indicating successive calendar days displayed in successive adjacent same color divisions whereby a multi period calendar is provided within the normal space and sight of a single period calendar.

4,226,444
PIPE JOINTS

Thomas W. Bunyan, London, England, assignor to Pilgrim Engineering Developments Limited, London, England

Division of Ser. No. 771,091, Feb. 23, 1977, Pat. No. 4,153,656.
This application Dec. 26, 1978, Ser. No. 973,459
Int. Cl.² F16L *13/10*
U.S. Cl. 285—21 **7 Claims**



1. A joint comprising:

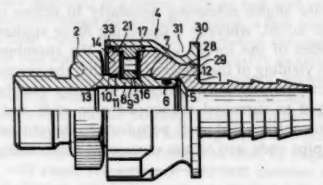
a coupling sleeve;

a pipe end, said coupling sleeve fitting closely but with clearance around the pipe end; means for closing the ends of said clearance space between said pipe end and said sleeve, said means comprising grooves in said sleeve at each end of said clearance space, hollow sealing rings located in said grooves, and a hardenable composition injected in said sealing rings inflating said sealing rings so as to span said space between said sleeve and said pipe end; a layer of hardenable composition set under pressure substantially greater than atmospheric filling said clearance space and in intimate contact with said pipe end and said coupling sleeve so that when the interior of the pipe is at atmospheric pressure the pipe end is pre-stressed radially inwardly, the layer of hardenable composition extending substantially over the whole of the interface between the pipe end and the coupling sleeve.

4,226,445
HOSE AND PIPE COUPLING

Dieter Kramer, Lindlar, Fed. Rep. of Germany, assignor to Armaturenfabrik Hermann Voss GmbH & Co., Wipperfürth, Fed. Rep. of Germany

Filed Oct. 20, 1978, Ser. No. 953,066
Int. Cl.² F16L *35/00*
U.S. Cl. 285—39 **6 Claims**



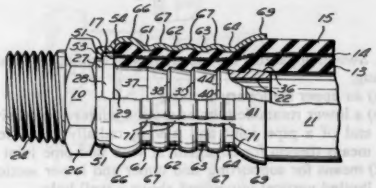
1. In a hose and pipe coupling having a coupling head and a nozzle which can be inserted into said coupling head, and which is lockable therewith by a locking element, wherein the locking element comprises a spring-elastic ring having a slit and onto which are formed two oppositely-directed, arcuate spring arms which surround and embrace the coupling head and wherein the coupling head has a slot-like circumferential opening and an internal annular groove for the partial reception of the spring-elastic ring, the nozzle at its coupling side being provided with an annular groove for at least partially receiving the spring-elastic ring in the inserted position of the nozzle, the improvement comprising:

a protective cap displaceably arranged on said coupling head and over said elastic ring after said nozzle and said coupling head are coupled together, wherein said elastic ring includes a gripping knob formed at the outermost end of each of the spring arms thereof, and wherein said protective cap is provided with radially-outwardly-protruding internal chambers for receiving said knobs, said protective cap also having formed therein an internal annular groove on an end portion thereof distal to said nozzle which is engageable with an annular shoulder provided on said coupling head, when said cap is fully retained on said coupling head so that said internal chambers will be in proper position for receipt thereon of said gripping knobs.

4,226,446
HOSE COUPLING

George C. Burrington, Wickliffe, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Nov. 20, 1978, Ser. No. 962,071
Int. Cl.² F16L *33/20*
U.S. Cl. 285—256 **6 Claims**



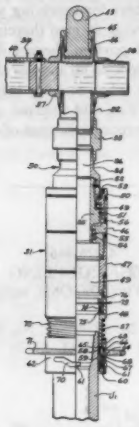
1. A hose end assembly comprising a metal hose coupling and a flexible, nonmetallic hose having an inner bore and an outer surface, said hose coupling including an insert member having an insert portion within said hose bore and a fitting portion to connect said hose end assembly with another part, said hose end assembly including a sleeve member extending over the outer surface of said hose for an axial length substantially coextensive with the insert portion within said hose bore, said sleeve member being deformably secured to said insert member intermediate said insert portion and said fitting portion, said sleeve member and said insert portion defining a radially extending abutment in engagement with the end of said hose, said insert having at least three annular ridges of uniform axial spacing on its surface in contact with said hose bore, said annular ridges being interspaced by annular grooves, said annular grooves having a relatively shallow inward slope on their outer sides, said sleeve member having a wall portion of substantially uniform wall thickness extending over said hose and being deformed radially inward at at least three annular crimp zones of uniform axial spacing to deform the hose portion radially inward of the crimp zone, the spacing between said crimp zones being slightly greater than the spacing between said annular ridges, said outermost crimp zone and said outermost annular ridge adjacent the end of said hose being in axial alignment, each successive crimp zone being spaced progressively further inwardly from each successive annular ridge and opposite a shallow inward slope whereby said hose is compressed radially to the greatest degree at said outermost crimp zone and is compressed a progressively lesser degree at each of the successive crimp zones progressing inwardly away from the end of the hose.

4,226,447

SWIVEL APPARATUS

Cicero C. Brown, deceased, late of Houston, Tex. (by Joe R. Brown, executor), assignor to Brown Oil Tools, Inc., Houston, Tex.

Filed Jan. 9, 1976, Ser. No. 647,759
Int. Cl.³ F16L *37/18*; B25D *17/14*
U.S. Cl. 285—316 **11 Claims**



1. Swivel apparatus for use with well drilling systems comprising:

(a) an upper stationary section;

(b) a lower rotatable tubular section adapted to receive one end of a pipe joint and having radially movable latch means therein for engagement with said pipe joint end;

(c) means for supporting said upper and lower sections for limited vertical movement above a well hole;

(d) said lower section including cam means longitudinally movable, relative to said latch means, from an inoperative position to an operative position camming said latch means from a first position, permitting free entry of said pipe joint end into said lower section, to a second position latching said pipe joint end in said lower section, said latch means being carried on a first tubular sleeve, said cam means being carried on a second tubular sleeve, and said tubular sleeves being axially movable relative to each other to effect said camming of said latch means into said second position;

(e) means operatively associated with said cam means for selectively retaining said cam means in said inoperative position independently of said pipe joint end comprising interengaged formations projecting as to one of said sleeves and receiving as to the other for preventing non-rotative relative longitudinal movement but permitting relative rotation of said sleeves from said inoperative position; and

(f) biasing means carried by said lower section biasing said camming means toward said operative position.

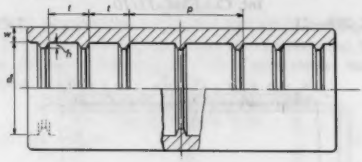
4,226,448

HEAT-RECOVERABLE METALLIC COUPLINGS

Harry C. Broyles, Sunnyvale, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 869,720, Jan. 16, 1978, abandoned. This application Jan. 16, 1979, Ser. No. 3,990
Int. Cl.² F16L *25/00*
U.S. Cl. 285—381 **21 Claims**

1. A coupling which comprises a hollow, generally tubular metal member which is heat-shrinkable in the radial direction and is provided on its inner surface with at least three teeth in the form of radially extending rings, the distance (t) between corresponding points on any pair of adjacent teeth having a value which is less than 0.95 d and less than 4 w, where d is the internal diameter of that portion of the tubular member between the teeth, and w is the wall thickness of that portion of the tubular member between the teeth, the distance from the



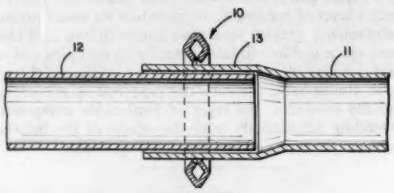
center of the member to the tooth nearest the center of the member being from 0 to 0.3 d, there being at least one tooth either side of the tooth nearest the center of the member, and the distance (p) between corresponding points on the two teeth adjacent the tooth nearest the center of the member having a value which is more than the smaller of 0.4 d and 3 w.

4,226,449

PIPE CLAMP

Richard O. Cole, Newbury Park, Calif., assignor to American Machine & Hydraulics, Newbury, Calif.

Filed May 29, 1979, Ser. No. 43,173
Int. Cl.³ F16L *13/14*
U.S. Cl. 285—382.2 **1 Claim**



1. A pipe clamp made up of yieldable material folded to form a toroid, the cross section of the generating closed curve for the toroid being of rhombic shape with diagonally opposite acute vertices defining the outer and inner circular peripheries of the toroid, the outer periphery constituting a fold line and the inner periphery constituting adjacent annular edges of the folded material, the remaining vertices of the rhombus constituting obtuse angles extending annularly to define opposite sides of the toroid, whereby a squeezing force applied to the opposite sides of the toroid will flatten the rhombus shape, resulting in yielding of the material such that the circular inner periphery circumferentially contracts, whereby said clamp can be positioned to surround telescoped pipe ends and thence squeezed to contract said inner periphery to thereby annularly clamp the pipe ends into secure connected relationship.

4,226,450

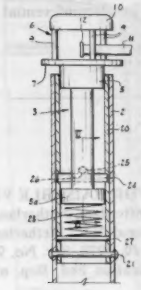
GATE LATCH

Kenneth G. Kerr, Timboon, Australia, assignor to Ada M. Kerr; Alan G. Kerr, both of Timboon; Keith E. Kerr, Cobden; Bruce K. Kerr and Colin F. Kerr, both of Timboon, all of, Australia

Filed Aug. 25, 1978, Ser. No. 936,727
Claims priority, application Australia, Aug. 25, 1977, PD1379; Oct. 21, 1977, PD2149
Int. Cl.³ E05C *3/40*
U.S. Cl. 292—59 **9 Claims**

1. A gate latch comprising a tubular support, a latch member having a shaft portion mounted within said tubular support for

rotation therein and a latch portion extending axially outwardly from said shaft portion having at least three peripheral adjacent projections being equispaced from each other and extending axially outwardly from said shaft portion, a complemental gate locking bar extending from a gate having locking



means at its free end to engage the latch portion within the space defined by said at least three adjacent projections to lock the gate relative to said tubular support, said projections being so equispaced such as to permit entry between adjacent projections of the complemental gate locking bar.

4,226,451

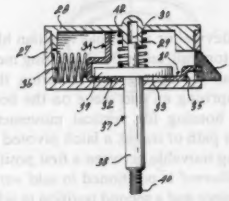
SAFETY LATCH

Hilaire Gingras, 475 Côte Joyeuse (P.O. Box 1328), St. Raymond, Portneuf County, Canada

Filed Oct. 27, 1978, Ser. No. 955,316

Int. Cl.[2] E05C 1/16

U.S. Cl. 292—169.21 **2 Claims**



1. A safety latch comprising an elongated housing having means to secure said housing to a door, window and the like closure pivotally mounted in a frame with an end wall of said housing coinciding with an edge of said closure, a bolt member having a latching outer end portion extending through an aperture in said end wall, said bolt member slidably mounted in said housing for movement longitudinally thereof between a protruding latching position and a retracted unlatching position, first spring means in said housing biasing said bolt member towards latching position, said latching outer end portion having a bevelled outer end face oriented so that, by engaging said frame, it will cause retraction of said bolt member upon closing of said closure, said bolt member including a flat base portion slidable against the internal surface of one longitudinal wall of said housing, and having an elongated slot extending longitudinally of said housing, said bolt member including an abutment plate portion extending transversely of said housing and of said base portion and remote from said end wall relative to said elongated slot, said abutment plate portion including a first part adjacent said base portion and a second part spaced from said base portion transversely of said housing, said first part being more distant from said end wall than said second part, an operating stem protruding from and extending transversely of said housing through said one longitudinal wall of said housing and through said elongated slot and mounted for rotation and for axial movement relative to said housing, an ellipsoidal cam fixed to said stem at its center and located within said housing intermediate said end wall and said abutment plate portion, second spring means in said housing biasing said stem outwardly of said housing to a first axial position in which said cam registers with said first part of said abutment plate portion, said stem movable against the bias of said second spring means inwardly of said housing to a second axial position in which said cam registers with said second part of said abutment plate portion, said cam clearing said first part in all rotated positions of said stem and cam, said cam clearing said second part only in rotated positions of said stem and cam wherein the longer axis of said cam extends transversely of said housing, whereby rotation of said stem while in said second axial position causes said cam to engage said second part and retract said bolt member to unlatching position against the bias of said first spring means.

4,226,452

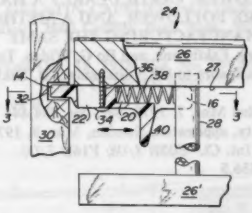
LATCH

Ronald R. Hoffman, Morgantown; Rex E. Payne, Jr., and David Saint, both of Elverson, all of Pa., assignors to Port-A-Crib, Inc., Hallam, Pa.

Filed Feb. 1, 1979, Ser. No. 8,629

Int. Cl.[2] E05C 1/04

U.S. Cl. 292—175 **10 Claims**



1. A latch comprising a one-piece latch member having a tongue on one end for entry into a cavity, the other end of said member having a pair of generally parallel arms extending therefrom, a support having a reaction surface generally perpendicular to a mounting surface of said support, said reaction surface being between said arms, a spring means extending between said reaction surface and said latch member, said latch member having a slot elongated in a direction generally perpendicular to said reaction surface, a single fastener extending through said slot, said fastener guiding said latch member for reciprocal movement and securing said member to said mounting surface of said support, the length of said slot and the length of said arms being proportioned so that said reaction surface is between said arms at all times and guides said latch member for reciprocal movement, an end wall of said slot disposed at a small angle with respect to the longitudinal axis of said fastener so that said spring biases said latch member into contact with said mounting surface.

4,226,453

PIVOTING ARM DOOR LOCK MECHANISM

Gene V. Robertson, 1906 Esther Dr., Carlisle, Pa. 17013

Filed Feb. 6, 1979, Ser. No. 9,767

Int. Cl.[3] E05C 17/16

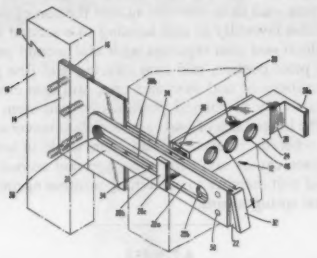
U.S. Cl. 292—268 **7 Claims**

1. A door safety lock mechanism comprising:

(a) a slotted arm pivotally attached to a door jamb, said slotted arm comprising a pair of arm members affixed together, and said arm members having aligned slots therein;

(b) a slidable bolt attached to a door adjacent said slotted arm such that the longitudinal axis of the bolt is coincident

with the pivoting axis of the slotted arm, the dimensions of a portion of the bolt being such as to pass through the slot when the arm is in a first position, and being prevented from passing through said slot when the arm is in a second position; and



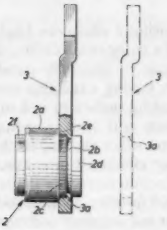
(c) means attached to said pivoting arm to engage said bolt and thereby lock the door in a partially open position, said means engaging said bolt being pivotally attached between said arm members.

4,226,454

LOCK FOLLOWER, PARTICULARLY A HANDLE OR PRESSURE FOLLOWER, AND A METHOD OF MANUFACTURING THE SAME

Erik R. Tranberg, Eskilstuna, and Bo G. Widen, Torshälla, both of Sweden, assignors to GKN-Stenman AB, Eskilstuna, Sweden

Filed Mar. 7, 1978, Ser. No. 884,444
Claims priority, application Sweden, Mar. 8, 1977, 7702601
Int. Cl.[2] E05B *3/08;* F16B *7/00*
U.S. Cl. 292—336.5 **2 Claims**



1. A lock follower, particularly a handle or pressure follower, comprising:

(a) an elongated arm member punched from sheet-metal material and having a circular hole through one end thereof initially of a first diameter,

(b) a cylindrical hub member having a central, axial bore extending therethrough and including, in axial succession:

(1) a first bearing portion having a diameter substantially equal to said first diameter,

(2) a recessed peripheral groove having a diameter less than said first diameter,

(3) an axially toothed anchoring and displacement portion having a diameter greater than said first diameter, and

(4) a main portion having a diameter greater than that of said anchoring and displacement portion to define an upstanding shoulder therebetween,

(c) the thickness of the arm member proximate its through hole being substantially equal to the combined axial length of the groove and the anchoring and displacement protion, and

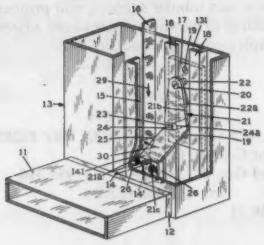
(d) the arm and the hub member being press-fitted together with the arm abutting the shoulder of the main portion, the bearing portion extending out from the arm hole, and the sheet-metal material of the arm being flow displaced by the anchoring and displacement portion to surround its axial teeth and substantially fill the groove, thereby rigidly joining the arm and hub member together and preventing any relative axial or circumferential movement therebetween.

4,226,455

LOCKING DEVICE FOR RAISABLE VENETIAN BLIND

Petrus J. Hennequin, Rotterdam, Netherlands, assignor to Hunter Douglas International N.V., Netherlands Antilles

Filed Jun. 19, 1978, Ser. No. 917,117
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1977, 2744930
Int. Cl.[2] E05C *15/00*
U.S. Cl. 292—345 **7 Claims**



1. In a locking device for a raisable venetian blind having a side housing, a bottom rail, and a flexible lifting member engaging the bottom rail for raising and lowering the same, the improvement comprising an end piece on the bottom rail extending into said housing for vertical movement with said bottom rail along a path of travel, a latch pivoted in said housing, said latch being movable between a first position in which at least a portion thereof is positioned in said vertical path of travel of said end piece and a second position in which said end piece may pass thereby, said latch being positioned to be engageable with said flexible member, and the position and movement of said latch being at least in part determined by the tension or lack thereof in said flexible member when engaged with said latch.

4,226,456

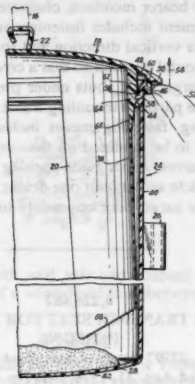
CONTAINER AND CONTAINER LID

John C. Barnett, R.D. 5, Box 5309, Lake Ariel, Pa. 18436

Filed Jan. 15, 1979, Ser. No. 3,292
Int. Cl.[3] A01K *29/00;* A47L *13/52*
U.S. Cl. 294—1 B **12 Claims**

1. A container lid with integral scoop which comprises a disc-shaped member, means about the perimeter of said disc-shaped member for securing said disc-shaped member to the circular top free edge of an open cylindrical container, said disc-shaped member having an annular channel adjacent its perimeter, said perimetral securing means including at least an inwardly facing outer circular protuberance adjacent the outer

side of said annular channel in said disc-shaped member, and a curved scoop means, said curved scoop means depending from



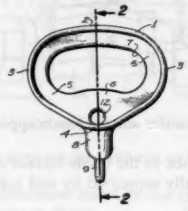
an annular inner portion of said disc-shaped member adjacent said annular channel.

4,226,457

MULTIPLE POSITIONABLE HAND TOOL HOLDER

Jeffrey G. Shutt, 516 N. Vista Bonita, Glendora, Calif. 91740

Filed May 22, 1979, Ser. No. 41,500
Int. Cl.³ B65G 7/12
U.S. Cl. 294—15 **3 Claims**



1. A manual oscillatable cutter tool, comprising:
a. an annular web dimensioned to be received in a user's hand;
b. an annular peripheral rim at the radially outer margin of the web and extending laterally therefrom;
c. a tubular stem extending radially outwardly from the rim;
d. a tubular cutter extending from within the tubular stem and having a cutting edge at its outer end;
e. The tubular stem including a radially inwardly extending passageway extending through the web to form a pellet outlet.

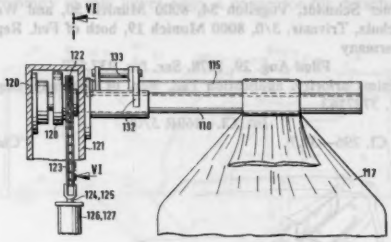
4,226,458

LIFTING TACKLE FOR FILLED SACKS

Fritz Achelpohl, and Konrad Tetenborg, both of Lengerich, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Aug. 28, 1978, Ser. No. 937,522
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1977, 2743208
Int. Cl.² B66C 1/42
U.S. Cl. 294—88 **9 Claims**

1. Apparatus for lifting a filled sack, comprising a frame, a pair of clamping bars about which a gathered and flattened end of the sack is slung, and means for mounting said bars on said frame, the pair of clamping bars being rotatable about an axis parallel to the bars from an initial spaced apart position to a terminal position in which the end of the sack is clamped tight between the bars, one of the clamping bars being displaceable towards the other in parallel relationship, the clamping bars



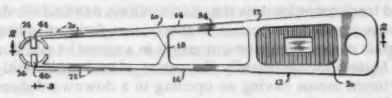
(10, 15); (110, 115) being held in their respective mounting means (4, 120, 121) only on one side such that they form parallel cantilever arms, one of said clamping bars moving toward and rotating about the other of said clamping bars during rotation of the bars from the initial to the terminal position.

4,226,459

GELATIN CAPSULE HOLDER

John C. Natalicio, 2600 Griffith Park Blvd., Silverlake, Calif. 90039

Filed Dec. 18, 1978, Ser. No. 970,455
Int. Cl.³ B25B 9/02
U.S. Cl. 294—99 R **7 Claims**



5. A one-piece holder integrally formed of a resilient plastic synthetic polymer composition material for holding a portion of a gelatin capsule for the filling thereof, said holder comprising:
a rear handle end;
a pair of arms substantially parallel to each other and extending forward from said handle end, each of said arms having a finger grip portion adjacent said handle end and then having a cantilever portion extending forward from said finger grip portion to form a bifurcated front end;
a flexure hinge joining said arms at the forward ends of their finger grip portions whereby manual squeezing of said finger grip portions toward each other causes said cantilever portions to openly diverge;
each of said cantilever portions having a forward jaw end, a jaw formed on each of said jaw ends cooperating with each other and being shaped to engage and retain a portion of a gelatin capsule therebetween, each of said jaws comprising a pair of fingers forming an arcuate segment tangential to said jaw end of said cantilever portion and defining a substantially circular bottom opening for receiving such gelatin capsule portion, each said jaw having a stop portion extending upward and parallel to each other above said fingers and then curved toward each other so as to face each other and cooperatively form a rounded configuration substantially matching the closed end of the capsule portion to retain said capsule portion within said jaws during capsule filling operations, said jaws being normally spaced apart a distance barely less than the width of such capsule so that, when holding such

capsule therebetween, said arms impose on said jaws a non-crushing force with respect to said capsule.

4,226,460

LONG-DISTANCE TRUCK CABIN

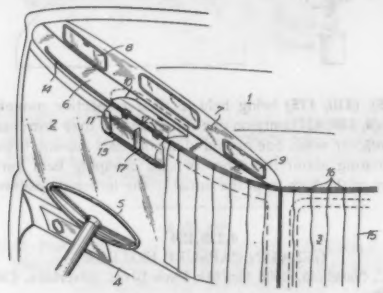
Werner Schmidt, Vogelloh 54, 8000 Munich 50, and Walter Scholz, Trivastr. 3/0, 8000 Munich 19, both of Fed. Rep. of Germany

Filed Aug. 29, 1978, Ser. No. 937,867

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 7727143

Int. Cl.³ B60R *5/00*

U.S. Cl. 296—37.7 **8 Claims**



1. A long-distance truck cabin comprising: windshield means; bin means above said windshield means in an angular space between a roof and front wall of said truck cabin; a horizontal bottom and a rear end wall confining said bin means; sliding curtain means at the front wall and side walls of said truck cabin for covering side windows and said windshield means; continuous curtain runner means for suspending said curtain means; compartment means in a recess in said horizontal bottom in substantially the center of said cabin; said compartment means having an opening in a downward direction; said compartment means having cover means pivotally supported by horizontal hinge means; said continuous curtain runner means extending across said opening whereby said curtain means may be stored in said compartment means when not in use.

4,226,461

FASTENING ARRANGEMENT FOR REMOVABLE STORAGE SERVICES

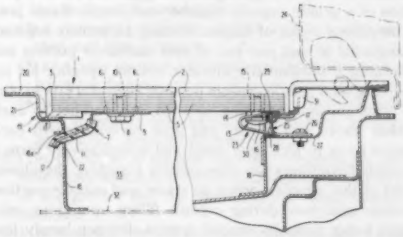
Sabet Ackel, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 13, 1978, Ser. No. 941,909

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1977, 2741540

Int. Cl.³ P60R *5/04*

U.S. Cl. 296—37.14 **19 Claims**



1. A fastening arrangement for a removable cargo floor provided with a covering in a vehicle, the cargo floor being adapted to rest on a mounting frame means formed at least in part of vehicle bearer members, characterized in that the fastening arrangement includes fastening means for locking the cargo floor in a vertical direction and for retaining the cargo floor in a horizontal position so that a covering pulled over all edges of the cargo floor abuts under pressure at a vertically extending frame part of a mounting frame means also provided with a covering, fastening means includes at least one lug means adapted to be mounted on the cargo floor for engagement under prestress into a guide opening of a mounting frame means of a vehicle and at least one detent means adapted to be arranged on the cargo floor oppositely to said lug means.

4,226,462

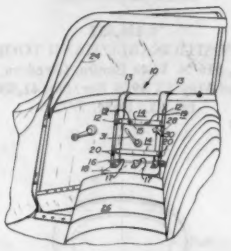
CAR DOOR TRANSFER SEAT FOR HANDICAPPED PERSONS

Gabriel Wellett, 22797 Rosalind Ave., East Detroit, Mich. 48021

Filed Aug. 31, 1978, Ser. No. 938,464

Int. Cl.³ B60N *1/02*

U.S. Cl. 296—68 **6 Claims**



1. A car door transfer seat for handicapped persons comprising:

a support attached to the inside surface of a car door;

a seat horizontally supported by said supports at a level of the front seat;

a handle attached the support for aiding handicapped persons in entering and leaving the vehicle;

sides of the seat curving forward to present an edge approximately perpendicular to the car axis when the door is open; and

an end of the seat opposite the hinge shaped to abut an end of the car seat when the seat is in its down position and the door is moved toward a closed position.

4,226,463

WINDSHIELD MOUNTING ASSEMBLY

Lawrence J. Gager, Jr., P.O. Box 16212, Jacksonville, Fla. 32216

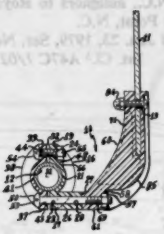
Filed Oct. 2, 1978, Ser. No. 947,513

Int. Cl.³ B62J *17/00*

U.S. Cl. 296—78.1 **22 Claims**

1. A windshield mounting assembly comprising a handlebar clamp including a closeable opening having an axis extending therethrough, an element extending laterally outwardly of said handlebar clamp, an elongated windshield mounting member having an inner end portion adjacent to said element and extending laterally of said axis a single, connecting means for movably attaching said mounting member inner end portion to said element and for selectively closing said opening, said

mounting member further including an outer end portion having bifurcated legs defining a plane therebetween extending



generally parallel with said axis and adapted to receive an outer edge portion of a windshield therebetween.

4,226,464

ARM REST SHAPED TO INCLUDE A THROUGH GRIP OR HAND GRIP WITH HOLLOW MOLDED BODY

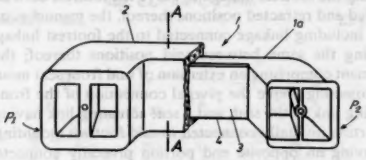
Joachim Janz, Wuppertal, and Bodo Mentzel, Velbert, both of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Neuentreich, Fed. Rep. of Germany

Filed Oct. 5, 1977, Ser. No. 839,648

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1976, 2645463

Int. Cl.[2] B60J *9/00*

U.S. Cl. 296—153 **5 Claims**



1. A through grip arm rest for a vehicle, or the like, comprising:

a supporting reinforcement insert having extending portions effecting attachment planes;

said insert being a hollow body which is hollow from one said attachment plane of said arm rest to the other attachment plane thereof and being molded with an open section intermediate said extending portions and a cover closing said open section to complete said insert, including a padded outer layer around said insert.

4,226,465

LOAD SUPPORTING FRAME ASSEMBLY

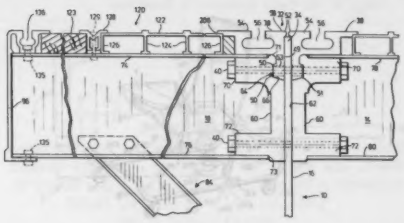
William L. McCullough, 2099 Helena Rd., Winterhaven, Fla. 33880

Filed Nov. 20, 1978, Ser. No. 962,065

Int. Cl.[3] B62D *21/02*

U.S. Cl. 296—182 **12 Claims**

1. A load supporting frame assembly comprising, in combination, a pair of longitudinally extending transversely spaced main beams, a plurality of central transverse members extending between said main beams in longitudinally spaced relationship along said main beams and a plurality of transverse outboard members outwardly extending from said main beams in longitudinally spaced relation along said main beams, a longitudinally extending side rail secured to the extending ends of said transverse outboard members, said main beams having a generally I-shaped configuration and comprising a vertically disposed web having an upper edge and a lower edge, an upper flange formed by a pair of angle members each having a pair of flanges perpendicular to each other and secured back-to-back to the web at the web upper edge by one flange each whereby the other flanges fall in a common plane, and a lower flange formed by at least one angle member having a pair of flanges perpendicular to each other secured to the web at the web lower edge by one flange whereby the other flange is in a plane in proximity to said lower edge, a connector for detachably



securing said transverse central members and said transverse outboard members to said main beams comprising a planar base adapted to abut the beam web, and one of said angle member flanges or said connector planar bases having a key formed thereon and the other having a mating keyway formed therein whereby the angle members, connectors and transverse members are self-aligning with each other when assembled and secured together.

4,226,466

TRUCK, ESPECIALLY A LARGE CAPACITY VEHICLE OR TRACTOR SEMI-TRAILER COMBINATION

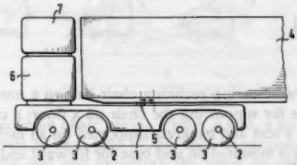
Hans Moll, Augsburg, and Klaus Flesche, Wiesbaden, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nürnberg, Fed. Rep. of Germany

Filed Sep. 28, 1978, Ser. No. 946,790

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1977, 2741125

Int. Cl.[3] B62D *27/00*

U.S. Cl. 296—190 **10 Claims**



1. A truck, especially large capacity vehicles and tractor semi-trailer combinations, comprising in combination:

a motor-steering unit;

a payload carrier connected to said motor-steering unit;

at least one lower vehicle control cab secured to said motor-steering unit; and

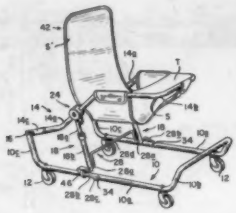
at least one additional upper expandable and foldable cab structure variable in height adaptable to height of said payload carrier for reduction of air resistance, said at least one lower vehicle control cab and said at least one additional upper structure respectively being in the form of separate interconnected units arranged on top of one another, the lowermost respective unit being mountable on said motor-steering unit.

4,226,467

FOLDABLE CANTILEVERED PLAYSEAT

Robert J. Boudreau, Bedford, Pa., assignor to Hedstrom Co., Bedford, Pa.

Filed Jul. 23, 1979, Ser. No. 59,895
Int. Cl.[2] A47D *13/04*
U.S. Cl. 297—5 7 Claims



1. A child's playseat comprising a base, a generally U-shaped seat-supporting frame member having two legs connected by a bight, means for pivotally connecting the free ends of the legs to the base, a generally U-shaped bail, means for pivotally connecting the opposite ends of the bail to the base below said frame member legs, a pair of telescoping struts having corresponding first ends pivotally connected to the frame member legs intermediate their ends and corresponding second ends pivotally connected to the bail, said bail having a position in overcentered engagement with the base when the seat is erect, means for biasing the struts toward their extended positions so that the bight of the seat-supporting frame member is positioned above the base, and seat structure suspended from the seat-supporting frame member.

4,226,468

WALL-CLEARING RECLINER

Carl B. Johnson, Pontiac, Ill., assignor to Pontiac Furniture Industries, Inc., Pontiac, Ill.

Filed Mar. 13, 1978, Ser. No. 885,585
Int. Cl.[3] A47C *1/02*; A61G *15/00*
U.S. Cl. 297—84 18 Claims

1. In a wall-clearing reclining chair having a normally stationary base for supporting the chair on a floor; a chair body comprising a seat and backrest supported on an included carriage which is mounted on said base for forward and rearward movement thereon between a rearward upright sitting position and a forward position permitting unobstructed recline of the backrest; and a retractable footrest supported on said chair body for forward and rearward movement thereon between a retracted position and an extended position in front of the seat of the chair:

means further interconnecting the chair body, the footrest, and the base to effect said forward and rearward movement of one of the chair body and the footrest by the corresponding movement of the other,

means connected to at least one of said carriage and footrest to store energy upon said rearward movement and to bias them for said forward movement upon the release of said energy, and

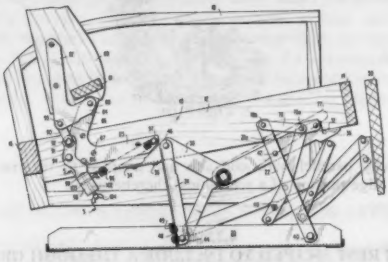
means operable by the occupant of the chair to release the stored energy to drive the carriage and footrest forward.

4,226,469

RECLINER CHAIR WITH WALL-AVOIDING ACTION

Walter C. Rogers, Jr., Denton, and David S. Hoffman, High Point, both of N.C., assignors to Royal Development Company, Inc., High Point, N.C.

Filed Jan. 23, 1979, Ser. No. 5,810
Int. Cl.[3] A47C *1/02*
U.S. Cl. 297—85 16 Claims



1. In a recliner chair having a seat, a base, front and rear seat mounting links both pivotally connected to the base and both pivotally connected to the seat to mount the seat for movement relative to the base between normal and reclining positions, a footrest, a footrest linkage mounting the footrest to the seat for movement between a retracted position adjacent the seat and an extended position projected forwardly from the seat, the footrest linkage including a footrest mounting link having one end pivotally connected to the seat, and manual means for actuating the footrest linkage to move the footrest between the extended and retracted positions thereof, the manual actuating means including linkage connected to the footrest linkage for operating the same between said positions thereof; the improvement comprising an extension of said front seat mounting link projecting above the pivotal connection of the front seat mounting link to the seat, and a seat actuating link having one end portion pivotally connected to said footrest mounting link and having an opposite end portion pivotally connected to said extension of said front seat mounting link such that when the footrest is moved to the extended position, said seat actuating link will pivot said front mounting link about its pivotal connection to the base to move the seat forwardly relative to the base into an inclined position forwardly of the base.

4,226,470

CONVERTIBLE COUCH OR CHAIR

Franz Wittmann, Etsdorf, and Franz Mitterbauer, Hadersdorf, both of Austria, assignors to Franz Wittmann Kommanditgesellschaft, Etsdorf, Austria

Filed Mar. 21, 1979, Ser. No. 22,477
Int. Cl.[3] A47C *13/00, 17/00*
U.S. Cl. 297—108 9 Claims

1. A convertible seating unit comprising:

a main frame adapted to stand on the floor;

a seat frame displaceable on said main frame between a rear sitting position over said main frame and a forward reclining position at least partially in front of said main frame;

a seat on said main frame;

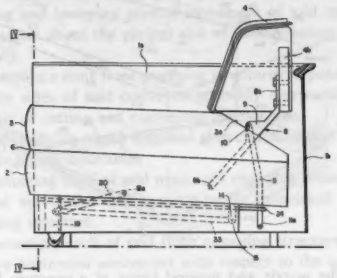
a back;

means interconnecting said back, seat frame, and main frame for automatically displacing said back between an up position above said seat and a down position generally level with and behind said seat on displacement of said seat frame respectively between said rear sitting position and said forward reclining position, said means including:

a pair of links each having one end pivoted on said seat frame and another end pivoted on said main frame, said one ends being behind said other ends in said sitting position and

being in front of said other ends in said reclining position;

a forwardly upwardly inclined guide on said main frame; and



a formation on said seat frame engaged in said guide and displaceable therealong on displacement of said seat frame between said sitting and reclining positions.

4,226,471

ASSEMBLY TRANSFORMABLE INTO FURNITURE

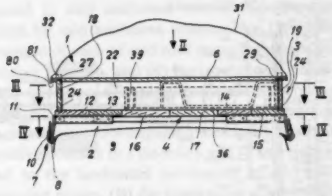
Ernst Zaugg, Luegisland, Oberlangenegg, CH-3611 Süderen, Switzerland

Filed Apr. 11, 1979, Ser. No. 29,032

Claims priority, application Switzerland, Apr. 14, 1978, 3993/78

Int. Cl.² A47C *13/00*

U.S. Cl. 297—118 **23 Claims**



1. An assembly adapted for transport on a vehicle and being transformable into furniture, the furniture including at least a table, and a bench,

comprising in combination:

a frame including a plurality of tubular elements which may be assembled one to another, to form carrying elements of the table and the bench of said furniture, and

a transport case, including a cover member therefor doubling as a table top of the table, and first and second groups of plates forming a floor member of said case, said first group of plates doubling as a backrest of said bench, said second group of plates doubling as a sitting portion of said bench.

4,226,472

UNATTACHED BASE FOR ROCKING CHAIRS

Eldon R. Mathis, 2216 SW. 63rd St., Oklahoma City, Okla. 73159

Filed Jan. 22, 1979, Ser. No. 5,335

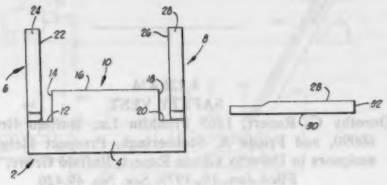
Int. Cl.² A47C *3/02*

U.S. Cl. 297—270 **5 Claims**

1. A device for placing under a rocking chair to prevent the rocking thereof, which rocking chair has a stationary element for supporting said chair on a surface, said stationary element having oppositely disposed outside surfaces, and which rocking chair also has a frame disposed over, and in pivotable engagement with, along a pivot axis, said stationary element at a predetermined distance above said surface at said pivot axis, said device comprising:

a spacing element having a first side defining a linear magnitude approximately equal to the distance between said outside surfaces of said stationary element of said rocking chair;

a first stop means having a height approximately equal to the



predetermined distance said frame is above said surface and extending perpendicularly from said first side of said spacing element; and

a second stop means having a height approximately equal to the predetermined distance said frame is above said surface and extending perpendicularly from said first side of said spacing element in spaced relation to said first stop means at a distance defined by said linear magnitude.

4,226,473

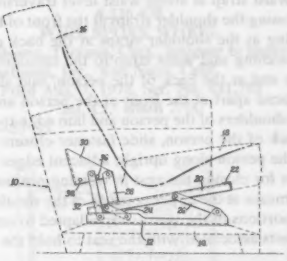
RECLINING CHAIR

Carl B. Johnson, Pontiac, Ill., assignor to Pontiac Furniture Industries, Inc., Pontiac, Ill.

Filed Mar. 13, 1978, Ser. No. 885,586

Int. Cl.² A47C *1/02*

U.S. Cl. 297—316 **3 Claims**



1. In a reclining chair having a base, a seat, a backrest, and linkage means at each side of the chair interconnecting said backrest and seat and mounting the same on said base for movement relative thereto and to each other from a sitting position to a reclining position,

the improvement wherein said linkage means includes a pair of seat-supporting links each pivoted to the base and to the seat on centers spaced from front to rear thereon to constitute therewith a four-bar linkage in which said links are inclined upwardly and rearwardly from the base to the seat in said sitting position,

the backrest being pivoted to the seat, and said linkage means including a third link pivoted to the base and extending upwardly therefrom to a pivotal connection to the backrest spaced rearwardly from the pivotal connection of the backrest to the seat when the chair is in sitting position,

the pivotal connection of the backrest to said third link constituting a shiftable fulcrum enabling the backrest upon recline to lift the seat, and to follow the seat forwardly of

the base as the seat is lifted by the rearward rotation of the backrest into said reclining position,

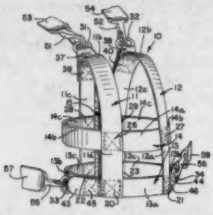
the said upward and rearward inclination of the seat-supporting links being maintained in all positions of the chair between said sitting and reclining positions so as to effect the return of the chair to the sitting position by the weight of the occupant as the occupant sits up to remove the force of his back against the backrest.

4,226,474

SAFETY VEST

Dorothy G. Rupert, 1265 Franklin La., Buffalo Grove, Ill. 60090, and Frieda A. Stobberingh, Prospect Heights, Ill., assignors to Dorothy Gloria Rupert, Buffalo Grove, Ill.

Filed Jun. 18, 1979, Ser. No. 49,420
Int. Cl.³ A47C *31/00*
U.S. Cl. 297—484 **12 Claims**



1. A safety vest for releasably holding a person in a seat, which comprises a pair of shoulder straps extending over the shoulders down the front and back of the person to about waist level, a waist strap at about waist level traversing around the waist crossing the shoulder straps at the front of the person and terminating at the shoulder straps at the back of the person, means fastening said waist strap to the shoulder straps at the crossings and at the back of the person, said shoulder straps being spaced apart at the front of the person and converging over the shoulders of the person and into edge-to-edge relation at the back of the person, slide fastener closure means at the back of the person along upright adjacent edges of said shoulder straps for closing the vest in wearing position on the person, and means at the upper portions of the shoulder straps and the side portions of the waist strap adapted to receive anchoring elements associated with the seat to hold the person in the seat.

4,226,475

UNDERGROUND MINERAL EXTRACTION

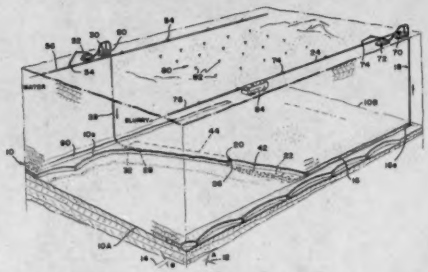
Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Charles G. Miller, Pasadena, and James B. Stephens, La Crescenta, both of Calif.

Filed Apr. 19, 1978, Ser. No. 897,832
Int. Cl.³ E21C *25/60, 5/00*
U.S. Cl. 299—13 **20 Claims**

1. A method for extracting a mineral from the ground comprising:

applying a stream of liquid under pressure through a conduit having a nozzle directed at the mineral; and

introducing a material to flow with said stream in said conduit and out through said nozzle, which is liquid under the pressure of said stream but which rapidly becomes a gas when the surrounding pressure is reduced below a critical pressure for that material, with the environment between



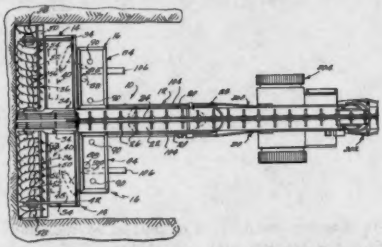
the nozzle and mineral being at a pressure below said critical pressure.

4,226,476

CONTINUOUS MINER WITH IMPROVED ROOF-TO-FLOOR ANCHORING CANOPY UNITS FOR ADVANCING AND TURNING MACHINE AND INSTALLING ROOF BOLTS

Jack R. Fairchild, Beckley; Joseph V. Lagowski, Mabscott, and James W. Gordon, Bluefield, all of W. Va., assignors to Fairchild Incorporated, Raleigh, W. Va.

Filed Nov. 28, 1977, Ser. No. 855,467
Int. Cl.² E21C *29/22*
U.S. Cl. 299—31 **32 Claims**



1. A continuous mining machine comprising

power driven cutting and conveying means operable when moved with respect to a working face of a mine seam including horizontal movement in a direction inwardly of the working face to remove the material from a section of the mine seam inwardly of the working face and to convey the same away from the working face,

said cutting and conveying means including an elongated conveyor assembly extending in a direction generally in alignment with the direction of horizontal movement so as to receive removed material at its forward end and convey the material away from the working face to the rearward end thereof, and a pair of cutting and conveying mechanisms extending laterally outwardly from opposite sides of said conveyor assembly and being operable to convey the removed material laterally toward the forward end of said conveyor assembly,

each of said cutting and conveying mechanisms including a mine floor engaging assembly, a rotary auger cutter, a mounting arm assembly rotatably supporting said rotary auger cutter for rotational movement about a lateral horizontally extending axis generally parallel to the working face, means mounting said mounting arm assembly on said floor engaging assembly for pivotal movement about an axis parallel with the axis of rotation of said rotary auger

cutter, power means carried by said floor engaging assembly operatively connected with said rotary auger cutter for effecting rotation of said rotary auger cutter about the rotational axis thereof, and means between said mounting arm means and said floor engaging assembly for effecting a raising and lowering pivotal movement of said rotary auger cutter about the pivotal axis of said mounting arm assembly,

a pair of separate mine floor engaging structures disposed on opposite sides of said conveyor assembly rearwardly of said pair of cutting and conveying mechanisms,

mine roof engaging means disposed above each of said mine floor engaging structures,

means mounting each of said mine roof engaging means for vertical movement with respect to the associated floor engaging structure,

means mounting each of said floor engaging structures for relative horizontal movement with respect to the associated cutting and conveying mechanism, and

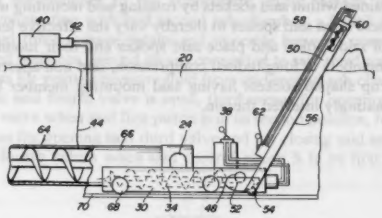
power operated means for (I) effecting vertical movements of each of said roof engaging means with respect to the associated floor engaging structure and (II) effecting relative horizontal movement between each floor engaging structure and associated cutting and conveying mechanism so that (A) successive sections of the mine seam can be removed by successive operative cycles, each of which includes (1) an upward movement of both of said roof engaging means into an operative position of engagement with the mine roof to thereby provide an anchored relationship of both of said floor engaging structures between the mine floor and roof, (2) generally simultaneous horizontal movement of both of said cutting and conveying mechanisms with both of said floor engaging structures disposed in said anchored relationship through forces resisted by said anchored relationship, (3) a downward movement of each of said roof engaging means out of said operative position, and (4) horizontal movement of each of said mine floor engaging structures with respect to the associated cutting and conveying mechanism with the associated mine roof engaging means disposed out of said operative position in a direction and to an extent generally equal to the horizontal movement of said cutting and conveying means, (B) the continuous mining machine can be moved through a 90° turn by an operative cycle with includes (1) an upward movement of one of said roof engaging means into an operative position of engagement with the mine roof to thereby provide an anchored vertical pivot relationship of the associated floor engaging structure between the mine floor and roof and (2) a repetitive series of successive movements of the floor engaging structure and the other roof engaging means associated therewith which includes (a) upward movement of said other roof engaging means into an operative position of engagement with the mine roof to thereby provide an anchored relationship of said other floor engaging structure between the mine floor and roof, (b) horizontal movement of the cutting and conveying mechanism associated with said other floor engaging structure with the latter disposed in said anchored relationship through a force resisted by said anchored relationship so as to move the entire machine about the anchored vertical pivot relationship provided by said one floor engaging structure, (c) downward movement of said other roof engaging means out of said operative position, (d) horizontal movement of said other mine roof engaging structure with respect to the associated cutting and conveying mechanism with said other mine roof engaging means disposed out of said operative position.

4,226,477

DEVICE FOR REMOVING THE EARTH GENERATED BY TUNNELING

Anastascio Capoccia, 48001 West Rd., Wixom, Mich. 48096

Filed Jan. 10, 1979, Ser. No. 2,355
Int. Cl.² E21C 35/20; E21D 9/12
U.S. Cl. 299—56 **8 Claims**



1. A device for removing the loose earth generated by a tunneling means comprising:

said tunneling means having a discharge aperture disposed at one end thereof;

a first conveyor means for receiving and conveying said loose earth generated by said tunneling means, said first conveyor means having a multiplicity of first input apertures disposed opposite the path of said discharge aperture of said tunneling means such that successive ones of said first input apertures are disposed in proximity with said discharge aperture of said tunneling means to receive loose earth therefrom as said tunneling means advances; and

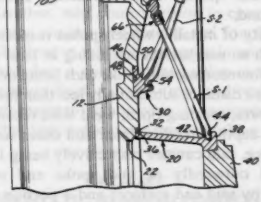
a second conveyor means for consuming said loose earth from first conveyor means and translating said loose earth to a receiving area.

4,226,478

WIRE SPOKE WHEEL

Raymond C. Brown, Tarzana, Calif., assignor to Superior Industries International, Inc., Van Nuys, Calif.

Filed Aug. 7, 1978, Ser. No. 931,755
Int. Cl.² B60B 7/00
U.S. Cl. 301—37 SS **9 Claims**



9. In a vehicle wheel construction having a solid and one-piece integral wheel body that includes a radially extending bolt-on flange which merges into a tire-receiving rim;

a plurality of replaceable spokes extending between radially inner and outer points on said wheel body, the outer end of each said spoke being threaded;

a plurality of recesses spaced circumferentially around said wheel body, said recesses each removably receiving the inner end of one of said spokes;

a plurality of non-apertured cup shaped sockets spaced circumferentially along the peripheral surface of said

wheel body axially of and facing toward said recesses; and,

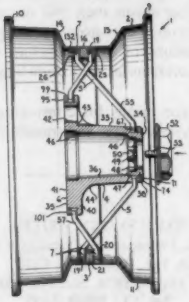
a mounting member threadedly carried by the outer end of each of said spokes and including a ball rotatably and removably disposed within one of said sockets, said mounting member also being formed with tool-receiving flats inwardly of said ball for imparting rotation to said mounting member, with said spokes being releasably retained within said sockets by rotating said mounting members upon said spokes to thereby vary the effective length of said spokes and place said spokes and their mounting members in longitudinal compression, said non-apertured cup shaped sockets having said mounting member balls matingly inserted therein.

4,226,479

WIRE SPOKE AUTOMOTIVE WHEEL

Richard G. Weld, Independence, Mo., assignor to Weldwheels, Inc., Kansas City, Mo.

Filed Jun. 23, 1978, Ser. No. 918,606
Int. Cl.³ B60B *1/06*
U.S. Cl. 301—67 **13 Claims**



2. In a spoked automotive wheel wherein spokes extend into bores, the improvement comprising the combination of:

(a) an annular spoke receiving member having an outer surface and spaced bores extending circumferentially therearound,

(b) a plurality of metallic wheel spokes respectively having ends with an end surface extending at least a substantial distance thereacross, said spoke ends being inserted within said bores a distance substantially less than the axial length of said bores, creating open, weld wire receiving cavities having a depth extending from said outer surface to said end surface, said cavities respectively being located adjacent and outwardly of said spoke end surfaces and bounded by said end surfaces and a portion of the inner surface of said bores extending outwardly thereof, and

(c) metallic wire bead weld formations contained within said cavities and fusedly joined respectively to said spoke end surfaces and to said bore inner surface portions,

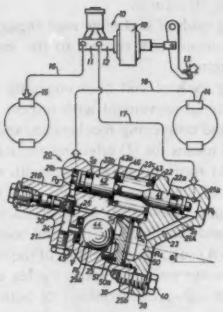
(d) said weld formations roughly constituting weld metal plugs which substantially laterally fill said cavities and blend with said end surfaces and said bore inner surface portions, thereby securely anchoring said spoke ends at a position partially within said bores against relative movement within said bores between said spokes and spoke receiving member due to automotive vehicle induced forces acting on said spokes.

4,226,480

BRAKE PRESSURE CONTROL DEVICE OF DECELERATION RESPONSIVE TYPE

Tomoyuki Nogami, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 13, 1979, Ser. No. 20,097
Claims priority, application Japan, May 29, 1978, 53-64171
Int. Cl.² B60T *8/14, 8/24, 8/26*
U.S. Cl. 303—24 C **3 Claims**



1. A brake pressure control device for installation in a vehicle braking system between a master cylinder and a wheel brake cylinder, the control device including:

a first housing section having an inlet port for connection to a master cylinder and provided at its inner end face with an annular protrusion in communication with said inlet port;

a second housing section having an outlet port for connection to a wheel brake cylinder and provided at its inner end face with a stepped inner bore in communication with said outlet port, said first and second housing sections being fitted to each other at their inner end faces such that said annular protrusion is mated within a large diameter portion of said inner bore to provide a valve chamber; and

a cut-off valve including a valve seat provided on the side wall of said inner bore to permit the flow of fluid between said valve chamber and said outlet port and inertia-controlled valve element housed within a small diameter portion of said inner bore to cooperate with said valve seat and moving toward said valve seat to interrupt the flow of fluid from said valve chamber to said outlet port when said valve element is subjected to a deceleration in excess of a predetermined value, wherein

the improvement comprises:

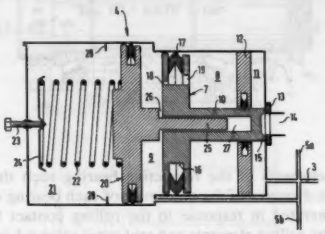
a partition member disposed within the large diameter portion of said inner bore to subdivide the interior of said valve chamber into front and rear chambers and receiving said valve element at its front face, said partition member being provided with a fluid passage communicating said rear chamber into said front chamber and being fixed in a predetermined position by abutment of its front face with the stepped portion of said inner bore and

an annular seal member of resilient material interposed between the back face of said partition member and the inner end of said annular protrusion such that said partition member is resiliently urged into said fixed predetermined position abutting against the stepped portion of said inner bore.

4,226,481
SPRING-LOADED BRAKE DEVICE FOR RAILWAY VEHICLES

Hans Pöllinger, and Paul Lohmeier, both of Munich, Fed. Rep. of Germany, assignors to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Filed Apr. 14, 1978, Ser. No. 896,570
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1977, 2717560
Int. Cl.[2] B60T 17/04
U.S. Cl. 303—82 14 Claims



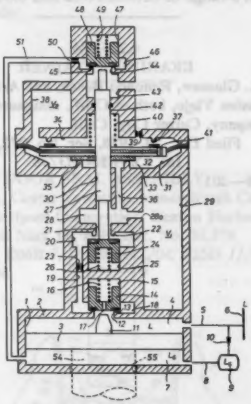
1. A venting valve for a spring-loaded brake device particularly in a railway vehicle and connected to a brake line to which is further connected a spring-loaded brake cylinder and a brake valve to control pressure in the brake line, said venting valve comprising means in said venting valve for opening a passage from the brake line to the atmosphere only when the pressure in the brake line is decreased from a brake release level to a level at which the brake cylinder effects contact between braking surfaces but before a braking force is applied, said passage being otherwise closed at the brake release level and after contact of the braking surfaces is effected such that the brakes are applied with a force proportional to the decrease in the brake line pressure and the venting valve exerts no influence in any subsequent control of the braking action.

4,226,482
BRAKE ACCELERATOR FOR A FLUID PRESSURE BRAKE SYSTEM

Georg Stäble, and Josef Hintner, both of Munich, Fed. Rep. of Germany, assignors to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 759,044, Jan. 13, 1977, abandoned. This application Apr. 27, 1978, Ser. No. 900,583
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1976, 2647283
Int. Cl.[3] B60T 17/04
U.S. Cl. 303—82 11 Claims

1. A brake accelerator for a fluid pressure brake system having a brake line and an auxiliary chamber with a throttle connection to said brake line, and comprising first means for defining a first chamber having a first piston movable therein between first and second positions, said first piston defining on one side thereof a first sub-chamber connected to the brake line and on the other side thereof a second sub-chamber connected to said auxiliary chamber, said first piston being in the first position when a pressure equilibrium exists in the first and second sub-chambers during release position of the brakes and being in the second position when the pressure in said second sub-chamber is greater than in said first sub-chamber during a service braking operation, a control piston movable in a second chamber between first and second positions, said control piston defining on one side thereof a third sub-chamber and on the other side thereof a fourth sub-chamber, first passage means between said third sub-chamber and the first sub-chamber, a first valve in said first passage means operable between positions to open and close said first passage means with respect to said first sub-chamber, a second valve connecting said first passage means to said third sub-chamber when said second valve is in an open position, means for defining a first control chamber communicating with said first passage means, a third valve in said first passage means between said first valve and said first control chamber and movable between open and closed positions, second passage means in connection with said first passage means for drawing off pressure fluid from said first control chamber through said first passage means and said third sub-chamber to the atmosphere, third passage means communicating with said second sub-chamber, a fourth valve in said third passage means and movable between open and closed positions, second means connected to said third passage means for venting pressure fluid from said second sub-chamber when said fourth valve is open, third means for opening said first valve when said first piston is in its second position, fourth means for opening said third valve and for closing said second and fourth valves when said control piston is in its first position, said fourth means closing said third valve and opening said second and fourth valves when said control piston is in its second position, pressure fluid entering said first control chamber from the brake line upon opening of said first valve when a decrease in pressure occures in said brake line to increase pressure in said first control chamber such that the increased pressure acts upon said control piston in conjunction with said fourth means to open said second and fourth valves and to close said third valve whereby pressure fluid is drawn off to the atomosphere from said first control chamber and said second sub-chamber, said control piston in conjunction with said fourth means closing said second and fourth valves and opening said third valve when the pressure in said first control chamber drops below a predetermined valve so that a limited quantity of pressure fluid is drawn from said brake line and a predetermined pressure relationship is maintained on both sides of said first piston during a service braking operation.



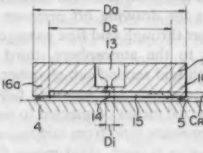
4,226,483
HYDROSTATIC BEARING COMPONENT

Hiroaori Yamamoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1978, Ser. No. 952,980
Claims priority, application Japan, Oct. 21, 1977, 52-126503
Int. Cl.[3] F16C 7/04, 32/06
U.S. Cl. 308—9 7 Claims

1. Hydrostatic bearing component, comprising first and second relatively movable members, said first movable member having a recess defined therein by stepped means at a side facing said second member, at least one orifice open to said recess, and a pressure supply communicating with said orifice, a ratio (β) of a gap C_s between said stepped means and said second member to a gap C_R between the bottom surface of said

recess and said second member ($\beta = C_s/C_R$) being in a range of between 0.2 and 0.7 when pressurized fluid is supplied to said pressure supply, and wherein a value λ defined by (ln



$D_o/D_s)/(\ln D_s/D_i)$, where D_o is a diameter of said first member, D_s is a diameter of said recess, and D_i is a diameter of said orifice, is in a range of between 0.02 and 0.06.

4,226,484

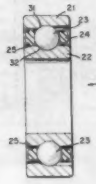
BEARING RETAINER

Franklyn A. Glassow, Redondo Beach, and Arthur C. Cunningham, Mission Viejo, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 20, 1978, Ser. No. 972,120

Int. Cl.[3] F16C *33/38*

U.S. Cl. 308—201 **6 Claims**



1. A ball bearing retainer comprising:

an annular body of open pore microporous foamlike material for storing lubricant, said annular body having a plurality of openings therein for receiving bearing balls and at least one projection on at least one circumferential surface thereof for contacting at least one circumferential surface of a bearing ring, said openings being sized to have an interference fit with said bearing balls, said projection being sized to have an interference fit with said bearing ring.

4,226,485

BEARING ASSEMBLY WITH THERMAL ADAPTOR

Francois C. Pruvot, Pully, Switzerland, assignor to F. Jos. Lamb Company, Warren, Mich.

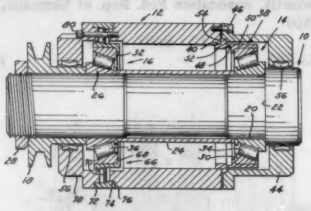
Filed Oct. 12, 1978, Ser. No. 950,802

Claims priority, application Switzerland, Oct. 17, 1977, 12656/77

Int. Cl.[3] F16C *35/077*

U.S. Cl. 308—207 R **30 Claims**

1. In a machine having a shaft rotatably supported in a housing by a pair of axially spaced antifriction bearings with radially compressed rolling elements between an inner race mounted on the shaft and an outer race supported by the housing, means for maintaining a substantially constant preload on the bearings, comprising a thermal adaptor disposed between said outer race of each of said bearings and said housing, said thermal adaptor comprising a first portion supported by the housing, a second portion which supports the outer race of the bearing radially and axially in a good heat conducting relationship so that the heat generated in the outer race is transmitted readily by conduction to said second portion of said thermal adaptor, and a third portion interconnecting said first portion and said second portion, said third portion being radially rigid and forming a relatively non-conductive thermal barrier between the first and second portions of the thermal adaptor, the configuration of each outer race, the second portion of each thermal adaptor and the rolling elements being such that the temperature rise of the outer race and the second portion of each thermal adaptor is related to the temperature rise of the



rolling elements of the respective bearing such that the increase in diameter of the outer race of each bearing due to the heat generated in response to the rolling contact forces between the rolling elements and said outer races when the shaft is rotated is substantially equal to twice the increase in diameter of a rolling element resulting from the thermal expansion due to said rolling contact forces.

4,226,486

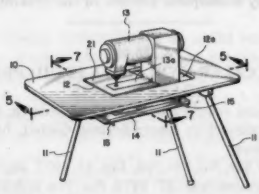
CONVERTIBLE TABLE STRUCTURE FOR SEWING MACHINES

Kent S. Roberts; Brent J. Roberts, and Fredrick D. Roberts, all of American Fork, Utah, assignors to Roberts Mfg., Inc., American Fork, Utah

Filed Dec. 29, 1978, Ser. No. 974,332

Int. Cl.[2] A47B *81/00*; D05B *75/00*

U.S. Cl. 312—21 **10 Claims**



1. A convertible table structure providing support and dual working surfaces for an open-arm or portable type of sewing machine, comprising an apertured platform having a work top and an underside, the aperture therein being of a size to accommodate the working portions of the sewing machine; a platform section adapted to receive thereon a sewing machine and being of size normally fitting closely within the aperture in the platform proper coplanar with the platform work top, said platform section being movable from the normal, coplanar position to a position below the work top, so a sewing machine mounted thereon is placed in suitable working position with respect to the work top, and vice versa, so as to re-establish the coplanar relationship between platform section and platform proper; elongate, parallel motion, link means movably attaching said platform section to said platform proper, so as to minimize horizontal movement of the platform section in moving vertically from coplanar position to lowered position and vice versa; means attached to the underside of the platform for moving said platform section between its said normal, coplanar position and a lowered position and vice versa, said means for moving the platform section being adapted to limit the extent of downward movement of said link means so as to minimize horizontal movement of the platform section as it is lowered

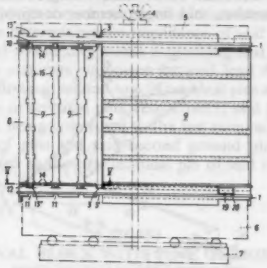
and raised and so as to support the platform section in a maximum lowered position; and means for supporting the platform proper at a convenient working level.

4,226,487

APPARATUS FOR THE DISPLAY AND DISPENSING OF MERCHANDISE

Hermann Hirsch, Karnten, Austria, assignor to Hermann Hirsch Leder- und Kunststoffwarenfabrik, Klagenfurt, Austria

Filed Apr. 13, 1978, Ser. No. 896,337
Claims priority, application Austria, Apr. 15, 1977, 2674/77
Int. Cl.[2] A47F *1/00*
U.S. Cl. 312—42 **6 Claims**



1. Apparatus for the display and dispensing of merchandise, comprising a stationary support, at least one vertically disposed merchandise carrier for displaying merchandise and from which merchandise can be selectively removed, means mounting said carrier for horizontal sliding movement on and relative to said support between extended and retracted positions in which the merchandise on said carrier is respectively displayed and stored, slide means mounted on said support for movement relative to said support and normally preventing detachment of said carrier from said support, said slide means being selectively manipulable to permit detachment of said carrier from said support, said slide means including a stop normally positioned in the path of a portion of said carrier to permit partial removal of said carrier from said support but to prevent complete removal of said carrier from said support, said stop moving out of the path of the carrier upon selective manipulation of said slide means to permit complete removal of said carrier from said support, the portion of said carrier that contacts said stop being disposed at one end of the carrier, and means disposed at the other end of the carrier to prevent removal of merchandise from the carrier from said other end of the carrier, whereby merchandise can be removed from the carrier only when the carrier is removed from the support.

4,226,488

FURNITURE FRAME

Rod G. Vincent, 124 E. Putnam Ave., Greenwich, Conn. 06830

Filed Apr. 2, 1979, Ser. No. 26,057
Int. Cl.[2] A47B *43/00*
U.S. Cl. 312—257 R **17 Claims**

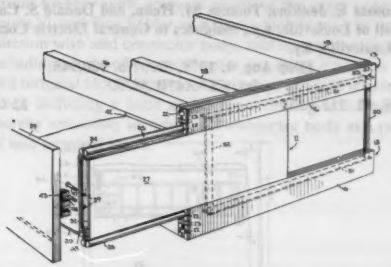
1. A furniture frame comprising

a base frame;

a top frame;

a drawer slidably mounted between said base frame and said top frame, said drawer including a pair of vertical sides, each said side being hollow and having a longitudinal groove extending from a front end towards a rear end to an intermediate point at each of an upper edge and a lower edge; and

a pair of divider frames, each said divider frame including a U-shaped member having a pair of horizontal legs each slidably mounted in a respective one of said base frame and said top frame and a vertical leg extending through a respective one of said sides in slidable relation to said grooves of said respective side and a vertical bar removably secured in said horizontal legs to the rear of said respective side.

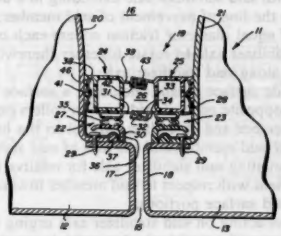


4,226,489

DOOR SEAL ASSEMBLY

Charles W. Haag, Center Township, Vanderburgh County, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 14, 1979, Ser. No. 38,574
Int. Cl.[3] E06B *7/16*; E05C *7/04*; F25D *11/00*
U.S. Cl. 312—296 **19 Claims**



9. In a refrigeration apparatus defining a refrigerated chamber and having a door assembly having first and second pivotally mounted doors defining vertically extending juxtaposed edge portions in a closed arrangement of the doors across the chamber, a pair of vertically extending dikes carried one each on said doors to extend rearwardly from said edge portions in spaced relationship to each other in said closed arrangement, the improvement comprising:

a pair of mounting means;

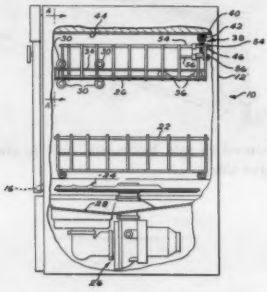
an outer, first pair of seals having a relatively rigid mounting portion mounted one each by said mounting means to said doors and a flexible sealing portion extending therefrom into overlapped sealed engagement with each other in said close arrangement of the doors;

an inner, second pair of seals having a relatively rigid mounting portion mounted one each by said mounting means to said dikes and a flexible sealing portion extending therefrom into sealed engagement with each other inwardly of said first pair of seals in said closed arrangement of the doors, said first and second pairs of seals defining a substantial dead air space within said refrigerated chamber adjacent said doors, thereby providing an effective thermal and moisture barrier when said doors are in said closed arrangement.

4,226,490
STABILIZING ARRANGEMENT FOR MOVABLY MOUNTED DRAWER OR RACK

Thomas E. Jenkins; Thomas M. Hahn, and Donald S. Cushing, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Aug. 4, 1978, Ser. No. 930,948
Int. Cl.[2] A47B *88/00*
U.S. Cl. 312—331 **12 Claims**



1. A motion stabilizing arrangement for a member mounted for guided relative translational movement with respect to a supporting structure along a fixed line of movement and in a fixed orientation with respect to said supporting structure, said arrangement including:

a stabilizer axle;

means rotatably mounting said stabilizer axle on said member, with said stabilizer axle extending in a direction normal to the line of movement of said member;

a pair of equal diameter friction rollers each connected to said stabilizer axle to rotate together therewith at spaced points along said stabilizer axle;

fixed guide surface means, including a surface portion disposed opposite each of said friction rollers on one side of said member and extending parallel to the line of movement of said member and the axis of said stabilizer axle;

means mounting said stabilizer axle for relative translational movement with respect to said member towards and away from said surface portions;

bias means acting on said stabilizer axle urging said friction rollers away from said member and into engagement with said fixed guide surface;

support means supporting the other side of said member during said translational movement and absorbing the reaction force created by said bias means;

whereby said friction rollers in engagement with said guide surface constrain said movement of said member along said line of direction in a fixed orientation with respect to said supporting structure and said support means is preloaded by said bias means.

4,226,491
ELECTRONIC DEVICE HAVING A PRINTED CIRCUIT BOARD UNIT THEREIN

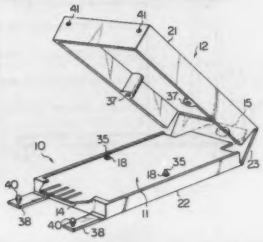
Kazuo Kazama, Kawasaki; Akira Oka; Masayoshi Shigihara, both of Tokyo, and Sueo Shinbashi, Yokohama, all of Japan, assignors to Fujitsu Limited, Japan

Filed Apr. 27, 1979, Ser. No. 33,896
Claims priority, application Japan, Apr. 28, 1978, 53/58960[U]
Int. Cl.[3] H05K *1/07*
U.S. Cl. 339—17 LM **8 Claims**

1. An electronic device for use in a communication system unit, said unit including a mounting chassis having a plurality of compartments, each compartment comprising means for receiving said electronic device and an electrical connector for making electrical connection thereto, said electronic device comprising:

a printed circuit board unit including a printed circuit board, said board being provided at one end with an integral electrical connector for engagement with said electrical connector of a respective one of said chassis compartments and at the opposite end with an integral handle for use for the insertion and removal of the electronic device into and from the chassis, and

cover means for containing said printed circuit board unit with said electrical connector and said handle projecting out from said cover means, said cover means being adapted to serve as guide means for insertion of the electronic device into the respective mounting chassis compartment and for positioning said circuit board within said cover means, said cover means being constructed from a single member, said single member comprising



first and second cover portions,

flexible hinge means for permitting said cover portions to be pivotally moved with respect to each other between open and closed positions of said cover means,

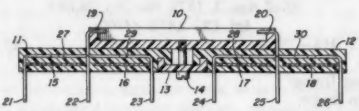
supporting seats formed on the inside of said cover portions for securely holding said printed circuit board unit when said cover means is in the closed position, and

locking means for retaining said cover means in the closed position, said locking means comprises a locking pin formed on the supporting seats on one of said cover portions, each said locking pin being adapted to pass through a hole formed in the printed circuit board for snap engagement with a hole formed in the other supporting seat on the other of said cover portions when said cover means is in the closed position.

4,226,492
ELECTRICAL INTERCONNECTION APPARATUS

Subhash R. Deo, Naperville, and Chester C. Faudskar, Wheaton, both of Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 30, 1979, Ser. No. 61,753
Int. Cl.[3] H05K *1/08*
U.S. Cl. 339—17 CF **1 Claim**



1. Electrical interconnection apparatus for adapting the terminal pattern of a first electrical component of first spacings to the terminal pattern of a second electrical component of second, greater spacings comprising an electrically insulative platform for supporting said first component, a row of n groups of terminals plus one terminal arranged on one side of said platform corresponding to said terminal pattern of said first component, each of said groups including three terminals,

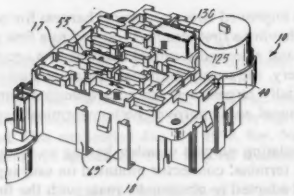
an insulative lead frame block mounted on the underside of said platform, a first row of n+1 terminal pins having said second spacings extending from said lead frame block aligned with said row of n groups of terminals, a second and third row of n+1 terminal pins each having said second spacings extending from said lead frame block on respective sides of said first row of terminal pins, first electrical conducting means for connecting the first terminals of each of said n groups of terminals and said one terminal to successive pins of said first row of terminal pins, second electrical conducting means for connecting the second terminals of each of said n groups of terminals and said one terminal to successive pins of said second row of terminal pins beginning with the first pin of said last-mentioned row, third electrical conducting means for connecting the third terminals of each of said n groups of terminals and said one terminal to successive pins of said third row of terminal pins beginning with the second pin of said last-mentioned row, and means for determining the impedance of said second and third electrical conducting means comprising first and second ground plane elements supported by said lead frame block between said first and second row of terminal pins and said first and third row of terminal pins, respectively, said first ground plane element being connected to the last terminal pin of said second row of pins and said second ground plane element being connected to the first terminal pin of said third row of pins.

4,226,493

TERMINAL BLOCK WITH FUSE GUARDS AND IDENTIFICATION SURFACE

Thomas M. Cairns, Birmingham; John H. Dewar, Grosse Ile, and Emmons F. Sumner, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 1, 1979, Ser. No. 16,473
Int. Cl.[3] H01R *13/631*
U.S. Cl. 339—66 M **2 Claims**



1. A fuse terminal block assembly for an automotive electrical system, said fuse terminal block assembly having a terminal block with a passage for receiving a blade contact of a fuse, said passage including a fuse holder for contacting the blade contact of a fuse;

a support means extending above the top surface of said passage so as to partially surround a fuse inserted into said passage thus providing protection against accidental removal of the fuse from said passage and yet exposing a portion of said fuse to facilitate intentional removal of the fuse from said passage;

an identification surface extending generally perpendicular to the direction of extension of said support means, said identification surface extending generally laterally away from the top opening of said passage for providing a surface for displaying information about the fuse to be placed in said passage; and

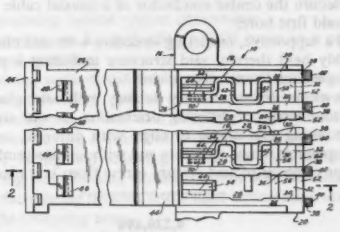
a cavity in said terminal block and a connector body insertable in said cavity, said connector body being adapted to receive a fuse, said cavity being adapted for receiving a circuit breaker thus increasing the versatility of said terminal block, said connector body having an opening aligned with said passage for receiving a fuse, said connector body including said support means and further including connection means for coupling said connector body to the remainder of said terminal block, said connector body being removable from said terminal so that there is provided an opening sufficiently large for the insertion of a circuit breaker with contacts reaching the same contact points in said fuse holder as a fuse which is used in conjunction with said connector body, said connection means including a pair of spaced fingers engaging a portion of said terminal block adjacent said passage and said terminal block including a latch means for receiving said fingers thereby releasably securing said connector body as a part of said terminal block.

4,226,494

CIRCUIT PANEL CONNECTOR

Charles F. Mazzeo, Scotch Plains, and Catherine K. Cotler, Cranford, both of N.J., assignors to Amerace Corporation, New York, N.Y.

Filed Dec. 28, 1978, Ser. No. 974,087
Int. Cl.[2] H01R *13/58*
U.S. Cl. 339—103 R **15 Claims**



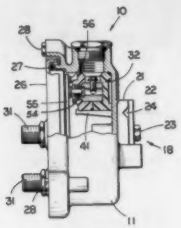
1. A circuit panel connector for electrically connecting a circuit panel, such as a printed circuit board, with an insulated wire, said panel connector comprising a one-piece connector body of dielectric material having a main portion and a cover portion, said main portion including a socket for receiving said panel, a rear wall, a floor, a pair of spaced side walls each unitary with said rear wall and with said floor and providing said main portion with a cell, an opening in open communication with said cell and with said socket, at least one of said side walls having a corner remote from said rear wall and from said floor and provided with a projection having an eave confronting said floor, said cover portion hingedly connected to said rear wall along an edge thereof remote from said floor and movable between an open position in which said cover portion does not cover said cell and a closed position in which said cover portion covers said cell, said cover portion having latching and strain relief resilient projection means, said latching projection means having a configuration adapted for latching interengagement with said eave to hold said cover portion in said closed position and said strain relief projection means located closer to said rear wall than said latching projection means and adapted, when said cover portion is in the closed position, to engage the insulation of a wire in said cell and undergo resilient flexure as said cover portion is moved to the closed position and said strain relief projection means engages the insulation of said wire in said cell, to provide strain relief.

4,226,495

CABLE SYSTEM SUBSCRIBER TAP WITH ROTATING CENTER CONDUCTOR SEIZURE APPARATUS AND SPIRAL CONTACT AND METHOD FOR USING SAME

Robert J. Palle, Phoenix; Sidney R. Smith, Glendale; Kenton D. Rockwell, Phoenix, and Charles F. Napierski, Sun City, all of Ariz., assignors to Texscan Corporation, Indianapolis, Ind.

Filed Apr. 27, 1979, Ser. No. 34,465
Int. Cl.³ H01R *9/10, 17/04*
U.S. Cl. 339—122 R **43 Claims**



1. A seizure apparatus for mechanical and electrical connection to the center conductor of a coaxial cable comprising:

(a) a rod-like, conductive seizure clamp, said clamp including:

(1) a first radial bore therein;

(2) a second radial bore tapped and intersecting said first bore; and

(3) a threaded seizure screw mating with said second bore to secure the center conductor of a coaxial cable inserted in said first bore;

(b) a supportive, insulating structure with said clamp rotatably held therein, said structure including a plurality of openings to said clamp; and

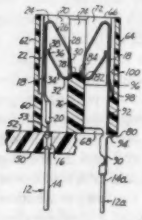
(c) means for alternately seizing with said clamp center conductors of differing orientation to said structure by rotating said clamp to align with different ones of said openings in said structure and without disassembly thereof or removal of said seizure screw from said clamp.

4,226,496

CIRCUIT BOARD EDGE CONNECTOR

Arvin L. Langham, Canoga Park, Calif., assignor to Elfab Corporation, Dallas, Tex.

Division of Ser. No. 384,776, Aug. 9, 1973, Pat. No. 4,094,573.
This application Apr. 21, 1978, Ser. No. 898,635
Int. Cl.³ H01R *13/42;* **H05K** *1/07*
U.S. Cl. 339—176 MP **17 Claims**



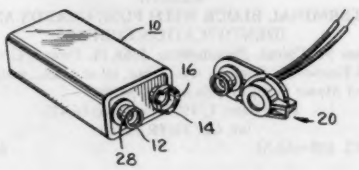
1. An edge connector for a circuit board comprising: a plurality of contact terminals each having a contact head, each of said contact heads including a loop portion; an insulative housing comprising a shell having oppositely disposed outer longitudinal walls and a bottom surface, a member between each of said walls forming cavity means between said member and each respective outer wall, the bottom of each of said cavity means being open, said member having an upper surface portion facing upwardly into each of said cavity means, said shell having an opening above said member to receive a circuit board for insertion along a predetermined axis so that said contact heads establish electrical contact to respective portions on such circuit board, said upper surface portion being substantially normal to said predetermined axis; and mounting means fixedly positioning each respective contact terminal with respect to the bottom surface of said shell, said mounting means comprising flange means on each of said contact terminals, said flange means being in abutting engagement with said bottom surface of said shell; and each of said loop portions continuously engaging an edge of the upper surface portion of said member for all operational conditions of the connector to bias said housing against said mounting means.

4,226,497

BATTERY TERMINAL HARNESS HAVING IMPROVED FASTENING MEANS FOR PREVENTING APPLICATION OF REVERSE POLARITY VOLTAGE

Samuel Polonsky, Monroe, and Edward V. Pomponio, Beacon Falls, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,550
Int. Cl.³ H01R *13/64*
U.S. Cl. 339—184 M **4 Claims**



1. An improved battery terminal harness for connection to a battery having a first terminal coupled to a first polarity of the battery and a second terminal coupled to a second polarity of the battery, the second terminal having at least one dimension substantially larger than the corresponding dimension of the first terminal, said improved battery terminal harness comprising:

an insulating support member having an opening therein;

a first terminal connector mounted on said support member and adapted to electrically mate with the first terminal of a battery;

a second terminal connector mounted on said support member and adapted to electrically mate with the second terminal of a battery;

an insulating cover member covering said first terminal connector, said cover member having an opening therein, the configuration of said opening in said cover member being such that the first terminal of the battery is sufficiently small to pass therethrough to mate with the first terminal connector and the second terminal of the battery is too large to pass therethrough to contact said first terminal connector; and

fastening means comprising:

a tab member connected to said cover member and extending across said opening in said support member, said tab member having an opening therein

aligned with said opening in said support member when said cover member is covering said first terminal connector, and

electrical leads connected to said first and second terminal connectors and passing through said aligned openings in said tab member and said support member to secure said cover member in position over said first terminal connector;

whereby inadvertent reverse polarity contact of said battery terminal harness to the battery terminals is prevented.

4,226,498

WATERTIGHT WALL FEEDTHROUGH FOR ELECTRICAL GROUND

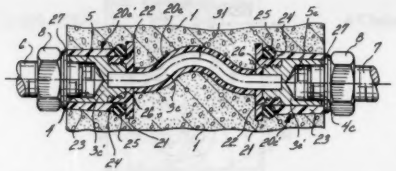
Werner Hauff, In den Stegwiesen 18, 7922 Herbrechtingen, Fed. Rep. of Germany

Filed Mar. 15, 1978, Ser. No. 886,822

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1977, 7711895; Jun. 14, 1977, 2726672

Int. Cl.[3] H01R *13/52*

U.S. Cl. 339—205 **10 Claims**



1. An electrical feedthrough fitting and grounding assembly comprising:

a cast wall having a pair of faces;

respective electrically conductive end pieces embedded in said cast wall and having ends lying at said faces, each end having an outwardly open blind bore exposed at the respective face;

a deformable and electrically conductive middle piece extending between and electrically interconnecting said end pieces;

an electrically insulating sleeve having a middle sleeve part surrounding said middle piece and a pair of end sleeve parts respectively surrounding said end pieces except at said ends thereof; and

respective terminal screws threaded into said bores.

4,226,499

ELECTRICAL CONTACT

Gerhard Bauerle, Willsbach, Fed. Rep. of Germany, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Division of Ser. No. 789,954, Apr. 22, 1977, Pat. No. 4,109,993, which is a continuation of Ser. No. 675,329, Apr. 9, 1976, abandoned. This application Jun. 13, 1978, Ser. No. 915,331

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1975, 2515813

Int. Cl.[3] H01R *13/12*

U.S. Cl. 339—258 R **11 Claims**

1. An electrical contact comprising:

a terminal post at one end;

a spring contact at the other end; and

an intermediate contact segment joining said terminal post and said spring contact;

said spring contact including a first contact portion extending from said intermediate contact segment substantially parallel to said terminal post, a first return bend portion, a second contact portion extending from said first return bend portion substantially parallel to said first contact portion, a second return bend portion, a third contact portion extending from said second return bend portion substantially parallel to said second contact portion, said first and second contact portions defining a plane disposed at an angle to a second, distinct plane defined by said second and third contact portions, said second and third contact portions defining a contact receiving spring member located substantially in line with said terminal post.

4,226,500

SCANNING OPTICAL SYSTEM WITH REFLECTIVE LENS

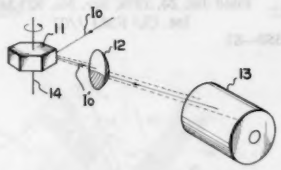
Kazuo Minoura, Yokohama, and Masamichi Tateoka, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 7, 1978, Ser. No. 967,397

Claims priority, application Japan, Dec. 7, 1977, 52/146963

Int. Cl.[2] G02B *27/17, 17/08*

U.S. Cl. 350—6.1 **5 Claims**



1. A scanning optical system comprising:

scanning means for deflecting a light beam in a predetermined direction;

a scanning surface scanned by said scanning means; and

an image forming optical system disposed between said scanning means and said scanning surface, said optical system having at least one single lens having its first surface facing said scanning means and its second surface facing said scanning surface, both of said first and second surfaces being divided into a light-transmitting area and a light-reflecting area.

4,226,501

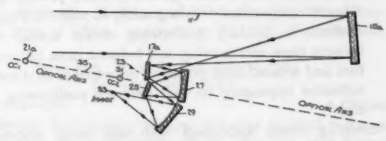
FOUR MIRROR UNOBSCURRED ANASTIGMATIC TELESCOPE WITH ALL SPHERICAL SURFACES

David R. Shafer, Fairfield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 12, 1978, Ser. No. 950,647

Int. Cl.[2] G02B *17/06*

U.S. Cl. 350—55 **8 Claims**



1. An all spherical telescope optical system comprising:

(a) a first mirror system comprising a first, concave spherical mirror and a second, convex spherical mirror having a common center of curvature the ratio of the radius of said first, concave mirror to said second, convex mirror being approximately $\sqrt{5}+1:\sqrt{5}-1$, said first mirror arranged to intersect input rays of collimated light and to direct them to said second mirror, said first and second mirrors

arranged off axis so as to not obstruct the light path to said first mirror; and

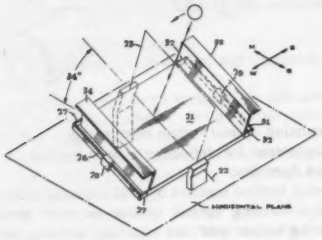
(b) a second mirror system comprising at least a third, concave spherical mirror and a fourth, convex spherical mirror having a common center of curvature, the radius of said third mirror being approximately twice the radius of said fourth mirror, said third mirror positioned to intersect light reflected from said second mirror and to reflect it to said fourth mirror, said fourth mirror reflecting light back to said third mirror from which it is reflected to form a real image, the optical axis of said system being defined by a line between the centers of curvature of said first and second systems.

4,226,502

SELF-CONTAINED SOLAR TRACKING DEVICE

Thomas Gunzler, 16149 Sherman Way, Van Nuys, Calif. 91406

Filed Jul. 24, 1978, Ser. No. 927,349
Int. Cl.[2] F24J *3/02*
U.S. Cl. 350—83 **29 Claims**



1. In an apparatus including a passive body having a predetermined generally north-south oriented tracking plane associated therewith, said body being suspended for rotation about a primary pivotal axis lying in said tracking plane in close proximity to the center of mass of said body and inclined with respect to the local gravitational vector, self-contained, self-regulating solar energy-operated tracking means for rotating said body about said axis and maintaining said tracking plane in substantially continuous alignment with the apparent instantaneous position of the sun during successive diurnal transits thereof, said tracking means comprising:

at least one balance mass movably attached to said body and reciprocable between a first limit position and a second limit position spaced from said tracking plane and lying in a control plane containing said primary pivotal axis and oriented substantially orthogonally to said tracking plane;

heat-sensitive primary positioning means acting on said balance mass and moving said balance mass between said first and second limit positions in response to direct solar radiation impinging on said primary positioning means; and

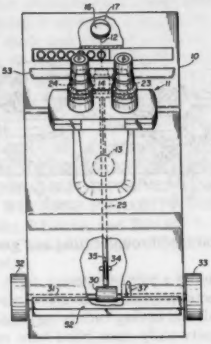
shielding means associated with said body, alternatingly shielding said primary positioning means from direct solar radiation when said tracking plane is substantially aligned with the apparent instantaneous position of the sun, and exposing said primary positioning means to direct solar radiation when said tracking plane is not so aligned, whereby said body is urged to rotate about said primary pivotal axis in the direction of the apparent diurnal motion of the sun.

4,226,503

BLOOD BANK MICROSCOPES WITH OSCILLATING VESSEL SUPPORT MEANS

Carlos A. Irazoqui, New York, and Emil A. Scordato, Bronxville, both of N.Y., assignors to Medical Laboratory Automation, Inc., Mount Vernon, N.Y.

Filed Oct. 2, 1978, Ser. No. 947,631
Int. Cl.[2] G02B *21/24, 7/04*
U.S. Cl. 350—87 **9 Claims**



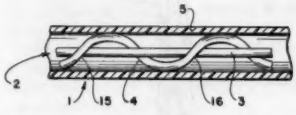
1. A reverse microscope for viewing a fluid specimen through the fluid supporting surface of a specimen vessel, said microscope comprising, pivotally mounted means adapted to support a specimen vessel in the focal plane of the microscope optics, means located relative to said vessel support means for illuminating from above a fluid specimen supported by said vessel support means, optical means adapted to be focused on a fluid specimen supported by said vessel support means for viewing the specimen from below, and means for oscillating said vessel support means to cause a fluid specimen in a specimen vessel to flow back and forth through the focal point of the microscope optics.

4,226,504

PROTECTION OF OPTICAL FIBERS

Robert A. Bellino, Windham Center, Conn., assignor to Akzona Incorporated, Asheville, N.C.

Filed Mar. 15, 1976, Ser. No. 666,730
Int. Cl.[3] G02B *5/14*
U.S. Cl. 350—96.23 **8 Claims**



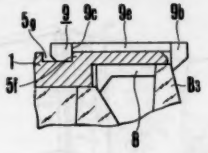
1. A fiber optic communication system comprising: a core, said core including at least one glass fiber optic rod and at least one soft, cushiony shock absorbant thread; said rod providing a low loss optical communications channel independent of the remainder of said core; said at least one soft, cushiony shock absorbant thread being substantially spiralled about and being in contact with said fiber optic rod; the contact between said thread and said rod being nonperpendicular to the longitudinal axis of said rod; a jacket covering said core whereby said fiber optic rod is protected from mechanical stress by said soft, cushiony shock absorbant thread.

4,226,505

HOLDING DEVICE FOR A LENS OF AN INTERCHANGEABLE LENS ASSEMBLY

Shigeru Hashimoto, Yokohama; Akira Masuda; Katura Mochizuki, both of Kawasaki; Akira Satoh, Ohme; Koshi Takeuchi, Kawasaki, and Teruhisa Oda, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 722,560, Sep. 13, 1976, Pat. No. 4,152,064.
This application Sep. 6, 1978, Ser. No. 940,083
Claims priority, application Japan, Sep. 18, 1975, 50/112867; Sep. 22, 1975, 50/114439; Sep. 25, 1975, 50/115782; Sep. 30, 1975, 50/117985
Int. Cl.³ G02B 7/02
U.S. Cl. 350—252 4 Claims



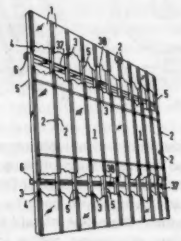
1. A lens holding device comprising, in combination: a lens element defining an optical axis and having a cylindrical outer circumferential plane; a holding member to hold said lens element, said holding member including a cylindrical part fitted with the outer circumference of said lens element, a receiving portion on a radially inner side of said cylindrical part to receive one surface of said lens element and one stepped portion on a radially outer side of said cylindrical part and axially located toward one side thereof; a flexible retaining ring fitted on said holding member to retain said lens element at said holding member, said retaining ring including a pressing part which is provided at one end of said retaining ring and which contacts said lens element on a side thereof facing away from said side where said stepped portion is located, and an engagement part engaging against the stepped portion of said holding member; said lens element being pressed toward the receiving portion by the elasticity of said retaining ring when said engagement part engages with the stepped portion of said holding member with said lens element being thus so retained within the holding member as to prevent shifting thereof in the direction of the optical axis.

4,226,506

SWIVELING SOLAR REFLECTOR WITH MULTIPLE REFLECTING ELEMENTS SUPPORTED BY PREFABRICATED CAMBERED MEMBERS

Robert H. Auger, Le Vesinet, France, assignor to Saint-Gobain Industries, Paris, France

Filed Apr. 5, 1979, Ser. No. 27,476
Claims priority, application France, Apr. 10, 1978, 78 10508; Nov. 10, 1978, 78 31808
Int. Cl.³ G02B 7/18
U.S. Cl. 350—292 14 Claims



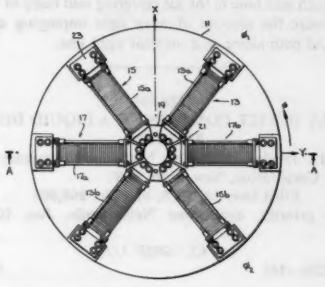
1. A solar reflector having a plurality of contiguous rectangular reflector panels and a supporting framework for the panels adated to be connected to a rigid rotatable member which is rotatable with respect to a fixed base and which includes girders following the curvature of the reflector, and where the framework includes a plurality of joists formed by parallel extending beams having cambered members following the curvature of the reflector joined thereto and supporting the long sides of the panels and the beams extending transversely to and being connected to the girders, the improvement comprising in that said joists are identical, in that a pin integrally connects each beam of a joist with a girder, in that a housing for each pin is contained within each girder and in that a longitudinal adjusting means is included for longitudinally moving each said pin with respect to a girder to provide adjustment of a beam with respect to a girder and the rigid rotatable member.

4,226,507

THREE ACTUATOR DEFORMABLE SPECIMEN

Anthony N. Fuschetto, West Redding, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jul. 9, 1979, Ser. No. 55,870
Int. Cl.³ G02B 5/10, 7/18
U.S. Cl. 350—295 13 Claims



1. A three actuator deformable specimen comprising:
(a) a planar deformable specimen having a central axis and six attachment points arranged in pairs on diameters of a circle drawn from said axis;
(b) a floating block aligned with said axis;
(c) first, second and third actuators disposed along said diameters, each actuator split into two parts and having a first portion extending between said central block and one of said attachment points on a diameter and the other part extending from the opposite side of said block to the other attachment point on said diameter.

4,226,508

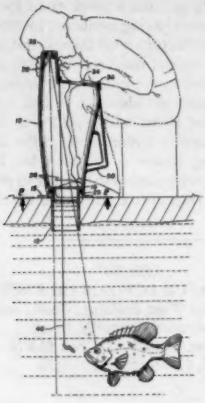
VIEWING AND ANGLING DEVICE FOR ICE FISHING

Dennis C. Michaels, Buffalo, and Michaels, John W., Chanhassen, both of Minn., assignors to D.J.L.J., Inc., Buffalo, Minn.

Filed Feb. 12, 1979, Ser. No. 11,116
Int. Cl.³ G02B 5/02
U.S. Cl. 350—319 4 Claims

1. A device for viewing objects in water located below a hole in a layer of ice covering a body of water, said device comprising:
a housing portion having a base for engaging the ice around said hole, a viewing port and a lower port, said viewing port and lower port located along a substantially vertical sight line through said housing portion; and
a substantially opaque tubular member, open at both ends, connected to said lower port and extending below the base of said housing, the substantially vertical sight line of

said housing portion passing through said tubular member, and said tubular member being of sufficient length that at least a portion of said tubular member may be extended



through said hole in the ice covering said body of water to minimize the amount of stray light impinging upon the optical path along said vertical sight line.

4,226,509

DISPLAY DEVICE COMPRISING A LIQUID DISPLAY MEDIUM

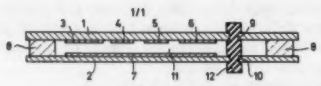
Jacobus H. Jacobs, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 13, 1978, Ser. No. 968,900

Claims priority, application Netherlands, Jan. 10, 1978, 7800275

Int. Cl.[2] G02F *1/13*

U.S. Cl. 350—343 **7 Claims**



1. A display device comprising a liquid display medium between two supporting plates and having a filling aperture which is sealed by means of a sealing member of an elastic material, characterized in that the sealing member is of an elastic material and extends through an aperture which is narrower than the cross-section of the elastic material in the stress-less condition, and that both ends of the sealing member are situated on the outside of the device.

4,226,510

SOUND MODULE FOR MOTION PICTURE CAMERAS

Thomas A. Svatek, Carlisle, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1979, Ser. No. 32,950

Int. Cl.[3] G03B *31/04*

U.S. Cl. 352—31 **14 Claims**

1. In a motion picture camera adapted to receive a multi-purpose cassette containing a photographic film strip and a separate audio tape, the camera having a body to support components operative to advance the film strip incrementally past a photographic station for the exposure of the film strip to successive image frames, a sound module to establish an audio station separate from said photographic station and for recording sound signals on the audio tape, said sound module comprising:

a mounting plate;

vibration damping means to secure said mounting plate to the camera body;

a transducing head having a tape engaging face;

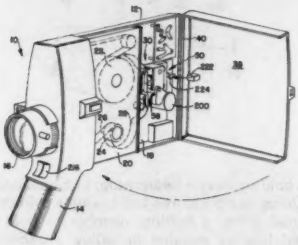
a head housing to rigidly support said transducing head;

means to secure said head housing to said mounting plate;

an audio tape drive capstan rotatably supported by said mounting plate;

means for rotatably driving said capstan;

a pinch roller pivotally supported by said mounting plate for movement between a retracted position spaced from said capstan and an operative position against said capstan;



a tape guide shoe slidably supported by said head housing for movement between a retracted position spaced from said transducing head and an operative position in close proximity to the face of said transducing head;

a fixed tape guide supported by said head housing adjacent to said transducing head for positioning the audio tape transversely in relation to said transducing head;

yieldable means for biasing said pinch roller and said guide shoe toward the respective operative positions thereof; and

cam means for moving said pinch roller and said guide shoe to the respective retracted positions thereof.

4,226,511

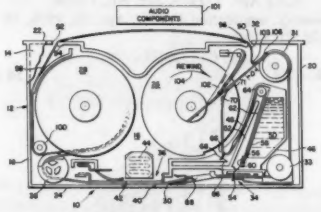
FILM STRIP/AUDIO TAPE ARRANGEMENT FOR AUDIO-VISUAL CASSETTE

Joseph H. Wright, Marbelhead, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1979, Ser. No. 32,947

Int. Cl.[3] G03B *23/02*

U.S. Cl. 352—72 **2 Claims**



1. A multipurpose audio-visual photograhic film handling cassette of the type having a strip of photographic film to be exposed and processed without removal from the cassette, the film being connected at opposite ends to supply and takeup spools for advancement from one of said spools to the other, the cassette including processing means initially sealed by a tear tab which may be removed by advancement thereof upon completion of film exposure so as to release reservoir-con-

tained processing fluid for deposit on the film strip, the tear tab including a latching formation at a free end thereof configured to pass through and interlock with a necked-down aperture provided in the film strip, the aperture being located near the end of the film strip attached to the supply spool; the cassette further including an audio tape interwound with the film strip upon the supply and takeup spools for advancement from one of said spools to the other along with the film strip; the improvement wherein the audio tape is coupled to the film strip at a given point, at the supply spool end of the film strip, further along the length of the supply end of the film strip than the location of the pull strip engaging aperture so that no audio tape lies adjacent the film strip aperture during the engagement of the pull strip with the aperture.

4,226,512

FILM PROJECTION SYSTEM

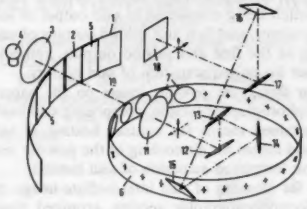
Hendrik v. Oosten, Leiden, and Willem J. P. A. Verbeek, 's-Gravenhage, both of Netherlands, assignors to N.V. Optische Industrie "De Oude Delft", Delft, Netherlands

Filed Sep. 1, 1978, Ser. No. 938,761

Claims priority, application Netherlands, Sep. 6, 1977, 7709798; Jun. 9, 1978, 7806311

Int. Cl.³ G03B *21/00, 41/04*

U.S. Cl. 352—115 **8 Claims**



1. A film projection system for use, inter alia, in an arrangement for editing films, which projection system includes a curved path for guiding a film, a light source for illuminating the film, a rotatable optical system and a projection screen, characterized in that said rotatable optical system comprises an endless support carrying a plurality of uniformly spaced identical object lenses, whose front nodal points are spaced apart a distance substantially equal to the centre-to-centre distance of two adjacent film frames and whose front nodal points are positioned along a circular path a portion of which has from said curved film guiding path a distance substantially equal to the focal distance of said object lenses; said object lenses having optical axes which converge at one point on the axis of rotation of the rotatable optical system; in said portion of said support, N object lenses of said object lenses simultaneously coact with N associated film frames, in which N is any integer or fraction greater than the unit; the plurality of parallel beams emanating from said N object lenses being projected and brought into superimposition on the projection screen by means of one projection lens; said projection system being such as to produce respective rotational velocities of the film in said curved path and said object lenses in said circular path which are substantially inversely proportional with respect to the radius vectors of said paths.

4,226,513

EXPOSURE DEVICE FOR MAKING A STRIPE SCREEN ON A FACEPLATE OF A COLOR CATHODE RAY TUBE

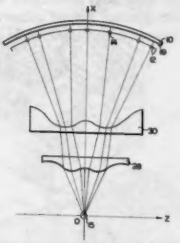
Taketoshi Shimoma, and Kumio Fukuda, both of Fukaya, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 8, 1977, Ser. No. 858,814

Claims priority, application Japan, Dec. 11, 1976, 51-148305

Int. Cl.³ G03B *41/00*; G03C *5/00*

U.S. Cl. 354—1 **5 Claims**



1. An exposure device for making a stripe screen on a panel section of a color cathode ray tube, said panel section including a shadow mask having a large number of slit apertures therein, said device comprising:

an elongated light source;

table means having an opening for allowing the passage of light emitted from said source and a mounting section for mounting said panel;

a first correction lens disposed between said source and said panel, said first lens having a central portion through which the optical axis of the lens passes and an outlying portion, said outlying portion including means for refracting light from said source toward said axis, forming a first virtual image, the center of the longitudinal axis of said first image being displaced in a first direction from the center of the longitudinal axis of said light source, and the longitudinal axis of said first image being inclined with respect to said light source; and

a second correction lens disposed between said first lens and said panel, said second lens having a central portion through which the optical axis of the lens passes and an outlying portion, said outlying portion including means for refracting light having passed through said first lens away from said axis, forming a second virtual image, the center of the longitudinal axis of said second image being displaced in a second direction opposite said first direction from the center of the longitudinal axis of said first image, to correct the displacement of the image of said light source and project the image of said light source on to the faceplate along the locus of electron beams passing in said color cathode ray tube.

4,226,514

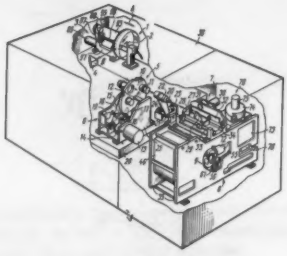
ELECTROGRAPHIC PHOTOCOMPOSING MACHINE

Igor V. Anfilov, ulitsa Udaltsova, 12, kv. 136, Moscow; Jury V. Abramov, ulitsa Petra Alexeeva, 113, Tula; Geny S. Ershov, prospekt Energetikov, 46, korpus 1, kv. 72, Leningrad; Valentin G. Bogomolov, ulitsa Malaya Andronievskaya, 7/17, kv. 1, Moscow; Eduard A. Kaidoshko, prospekt Lunacharskogo, 68, korpus 2, kv. 82, Leningrad; Jury B. Remizov, ulitsa Zelenogradskaya, 21, korpus 2, kv. 193; Anatoly L. Rozhenko, ulitsa Lavochkina, 6, korpus 2, kv. 215, both of Moscow, and Gennady P. Suvorov, prospekt K. Marxa, 70, kv. 81, Leningrad, all of U.S.S.R.

Filed Sep. 4, 1979, Ser. No. 72,555

Int. Cl.³ G03B *15/00, 17/06*; G03G *15/00*

U.S. Cl. 354—7 **4 Claims**



1. An electrographic photocomposing machine comprising:

a rotary type carrier;

a flashtube of said rotary type carrier, having a control unit;

a photographic unit arranged downstream of said type carrier along the beam from said flashtube;

a line forming mechanism arranged downstream of said photographic unit along the beam from said flashtube;

a drive of said line forming mechanism, which is essentially a start-stop mechanism;

an electric pulse generator of said drive of said line forming mechanism;

a switch of said drive of said line forming mechanism, having an input, a control input and an output, said input being connected to said electric pulse generator of said drive of said line forming mechanism;

an electrophotographic section arranged downstream of said line forming mechanism along the beam from said flashtube;

a cylindrical intermediate image carrier of said electrophotographic section, optically associated with said line forming mechanism;

a drive of said intermediate image carrier, which is essentially a start-stop mechanism;

an electric pulse generator of said drive of said intermediate image carrier;

a switch of said drive of said intermediate image carrier, having an input, a control input and an output, said input being connected to said electric pulse generator of said drive of said intermediate image carrier;

a step motor of said drive of said intermediate image carrier, connected in series with said output of said switch of said drive of said intermediate image carrier;

a computer unit having a first, second, third, fourth and fifth outputs, said first output of said computer unit being connected to said control input of said switch of said drive of said line forming mechanism, said second output being connected to said control unit of said flashtube, and said third output being connected to said control input of said switch of said drive of said intermediate image carrier;

a charging device of said electrophotographic section, arranged in direct proximity to said intermediate image carrier, in the latnet image forming zone, and having a lamp for exposure of said intermediate image carrier;

a latent image developing device of said electrophotographic section, contiguous to the surface of said intermediate image carrier and arranged in the direction of its rotation downstream of said charging device;

a powder image transferring device of said electrophotographic section, provided with a paper feed system having a paper web and a drive, said powder image transferring device ensuring mechanical contact between said paper web and said intermediate image carrier and being arranged downstream of said intermediate image carrier in the direction of its rotation, said paper web having a first side onto which the powder image is transferred and a second side opposite to the first;

heaters of said electrophotographic section, arranged near said paper web at its first side, downstream of said powder image transferring device in the direction of motion of said paper web, and having a neutral wire;

a self-contained means for contact heating of said paper web of said electrophotographic section, arranged at the second side of said paper web opposite said heaters;

a means for air coolong of the powder image of said electrophotographic section, arranged opposite said heaters level with said paper web;

a unit for pulsed actuation of said heaters of said electrophotographic section, having an input, a first and second outputs, said first output of said unit being connected to said heaters and said second output being connected to said means for air cooling of the powder image;

a cyclic counter of pulses of said drive of said intermediate image carrier of said unit for pulsed actuation of said heaters, having an input which serves as the input of said unit for pulsed actuation of said heaters and an output;

a switch of said unit for pulsed actuation of said heaters, having an input, a first and second outputs, said input of said switch being connected to said output of said cyclic pulse counter, said first and second outputs of said switch serving as the first and second outputs, respectively, of said unit for pulsed actuation of said heaters;

a unit for fixing the powder image on the paper of said electrophotographic section, comprising said heaters, said self-contained means for contact heating of said paper web, said means for air cooling of the powder image, and said unit for pulsed actuation of said heaters;

a device for cleaning of said intermediate image carrier of said electrophotographic section, arranged downstream of said powder image transferring device in the direction of rotation of said intermediate image carrier.

4,226,515

PHOTOGRAPHIC CAMERA

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 824,415, Aug. 15, 1977, which is a division of Ser. No. 529,904, Dec. 5, 1974, abandoned, which is a continuation-in-part of Ser. No. 428,454, Dec. 26, 1973, abandoned. This application Jun. 28, 1979, Ser. No. 53,050

Int. Cl.³ G03B *5/00, 7/24*

U.S. Cl. 354—21 **5 Claims**

1. Photographic apparatus of the self-developing type for use with film units requiring an even number of geometrical reversals and with film units requiring an odd number of geometrical reversals to provide a geometrically non-reversed positive image in the film unit, comprising:

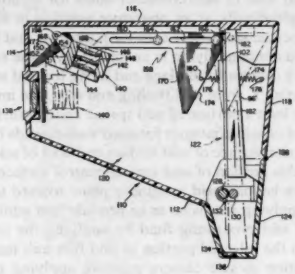
means for locating a film unit in position for exposure;

pressure-applying means including at least two juxtaposed members for spreading a processing fluid across a photosensitive layer of the film unit as it is moved therebetween subsequent to exposure;

lens means for geometrically reversing an image of a subject along two orthogonal axes;

optical means for geometrically reversing the image of the subject along only one of said orthogonal axes;

means for changing the relative position of said lens means and said optical means between a first orientation wherein said lens means and said optical means are in optical alignment with each other when the film unit requires an odd number of geometrical reversals and a second orientation



wherein said lens means and said optical means are out of optical alignment with each other when the film unit requires an even number of geometrical reversals; and

means coupled to said changing means and responsive to the loading of a cassette containing a film unit of the type requiring an even number of reversals for automatically moving said optical means from said first orientation to said second orientation.

4,226,516

CAMERA AND VIEWFINDER DISPLAY DEVICE THEREFOR

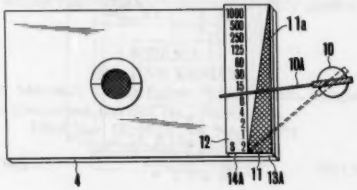
Tokuichi Tsunekawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 10, 1978, Ser. No. 949,554

Claims priority, application Japan, Oct. 14, 1977, 52-123353

Int. Cl.³ G03B *17/18*

U.S. Cl. 354—60 E **10 Claims**



9. A camera comprising:

(a) a timer circuit for controlling the shutter time; and

(b) display means for displaying the progress of exposure time based on the output of said timer circuit, said display means being arranged to operate when said shutter time is longer than a predetermined length of time.

4,226,517

CAMERA DEVICE

John S. Skarman, Corona del Mar, Calif., assignor to A 1000 Words Incorporated, North Hollywood, Calif.

Filed Apr. 30, 1979, Ser. No. 34,425

Int. Cl.³ G03B *29/00, 9/26, 17/36, 17/42*

U.S. Cl. 354—75 **9 Claims**

1. A preloaded automatic film advance camera adapted to facilitate factory reloading and redistribution, comprising:

a one piece molded plastic body including:

(a) walls defining viewfinder, film supply, film exposure and film take-up areas,

(b) front and rear viewfinder openings,

(c) an aperture for providing a picture taking light path within the film exposure area,

(d) a film supply member in the film supply area, and

(e) a spool support shaft in the film take-up area,

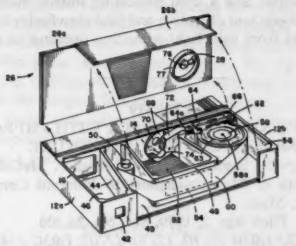
a lens covering the aperture;

a hollow cylindrical film take-up spool, rotatably supported on the support shaft and having a spiral groove on its top, said groove having a plurality of locking projections;

a pretensioned drive spring, attached to and disposed within said spool, for rotating the spool;

a supply of photographic film connected between the film supply post and the film take-up spool and passing by said film exposure area;

a locking spring attached to said body within the film take-up area, said locking spring including a downwardly extending finger extending into said spiral groove, said finger being normally biased against one of said locking projections so as to prevent the drive spring from rotating the take-up spool;



a shutter plate normally covering said aperture;

a two position shutter trigger arm pivotally secured to the body;

a shutter spring connected between the shutter plate and the trigger arm;

a shutter lever connected to the trigger arm for moving the trigger arm from its first position to its second position, thereby causing the shutter to be tripped by the action of the shutter spring;

a reset spring located in the body which automatically forces the trigger arm back from its second position to its first position when the shutter lever is released and temporarily lifts the finger of the locking spring out of engagement with one of the locking projections so as to enable the drive spring to rotate the take-up spool until the finger engages the next locking projection in the spiral groove, said reset spring thereby causing both the shutter plate to be reset by the action of the shutter spring and the film to be advanced automatically after the shutter lever is released; and

a removable cover attached to the top of the body.

4,226,518

PHOTOGRAPHIC CAMERA HAVING LONG FOCAL LENGTH OBJECTIVE

Ferdinand Kellner, Spittelmüllerstr. 6, 8940 Memmingen, Fed. Rep. of Germany

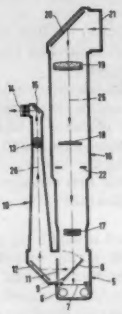
Filed May 11, 1979, Ser. No. 38,119

Int. Cl.³ G03B *17/48, 19/12, 17/00*

U.S. Cl. 354—79 **5 Claims**

1. Portable photographic camera apparatus comprising a tubular objective of long focal length having a light-admitting end and a film carrier end, a tubular viewfinder having a junction with said objective between said film carrier end and said light-admitting end, said viewfinder being positioned adjacent said objective, said viewfinder and said objective having paral-

lel longitudinal axes throughout most of their lengths, said viewfinder extending from said junction towards said one end of said objective and terminating in an eyepiece located longitudinally between said carrier end and said light-admitting end



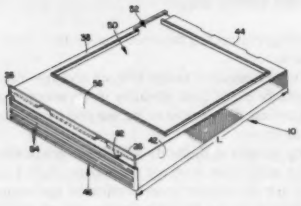
of said objective, and a light deflecting mirror means at the junction between said objective and said viewfinder for directing light rays from said light-admitting opening to said eyepiece.

4,226,519

SELF-DEVELOPING FILM PACK WITH IMPROVED SPREAD CONTROL STRUCTURE

Theodore Gervais, Burlington, and Thomas P. McCole, South Natick, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 2, 1979, Ser. No. 26,200
Int. Cl.³ G03B *19/10, 17/50, 17/02;* **G03C** *1/48*
U.S. Cl. 354—174 **6 Claims**



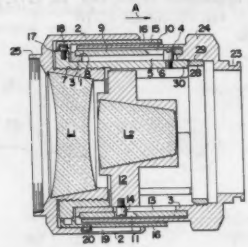
1. An improved photographic film pack for use in a self-developing camera, said pack including a container having a pair of generally opposed, substantially planar walls joined by a peripheral section including opposed leading and trailing end walls, one of said planar walls having a film exposure aperture therein and providing a forward wall of said container as viewed with respect to scene exposure, said opposed planar wall providing a rear wall of said container, at least one film unit locatable in a forwardmost position within said container with its image forming area adjacent to and in substantial registration with said exposure aperture, said leading end wall having a film exit slot therein adjacent said forward wall and through which the forwardmost film unit is advanced from said container into operative relation with camera pressure applying means for distributing a processing fluid within the film unit as the film unit is advanced from the container, said pack further having spread control means including at least one spread control surface located on the interior side of a leading end of said forward wall of said container adjacent said film exit slot for additionally controlling fluid distribution by applying pressure to a selected portion of the film unit's image area, said container having a predetermined longitudinal dimension L, as measured between the lower exterior surfaces of said leading and trailing end walls adjacent said rear wall, the camera also including means for receiving and supporting said film pack therein with said film exit slot in operative facing relation to said camera pressure applying means so that said forwardmost film unit may be advanced through said exit slot to said pressure applying means, said pack receiving and supporting means including at least a trailing end stop longitudinally spaced rearwardly from said camera pressure applying means by a distance greater than L and against which said trailing end wall of said container abuts for locating the container longitudinally at an operative position in said camera, when so located said lower exterior portion of said leading end wall of said container lying in an imaginary plane substantially normal to a camera focal plane and being located at a distance approximating L from said trailing end stop, the improvement wherein at least a portion of said spread control surface on said leading end of said container forward wall extends beyond said lower exterior surface of said leading end wall of said container such that this portion of said spread control surface extends in said camera beyond said imaginary plane toward said camera pressure applying means so as to provide said additional controlling of said processing fluid by applying the compressive pressure to the selected portion of said film unit image area in closer relation to said camera pressure applying means than said imaginary plane while retaining said longitudinal location of said container in said camera and wherein said camera pressure applying means and said spread control means are positioned relative to each other and suitably configured so as to modify the distribution of the processing fluid to be a substantially uniform wave front and thereby significantly improve the efficiency of fluid distribution to enable the use of a minimum volume of processing fluid.

4,226,520

SHOCK RESISTANT LENS DEVICE

Kyozo Uesugi, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 28, 1979, Ser. No. 16,455
Claims priority, application Japan, Mar. 3, 1978, 53-24774
Int. Cl.³ G02B *15/14;* **G03B** *3/00*
U.S. Cl. 354—195 **28 Claims**

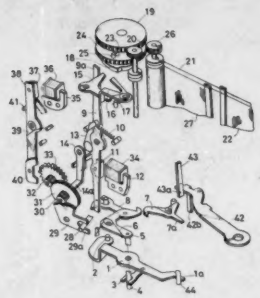


1. A zoom lens comprising a camera mountable barrel section, front and rear lens mounts axially movable in said barrel section, a rotatable cylindrical cam carried by and restricted against longitudinal movement relative to said barrel section and having a first track, a first follower longitudinally movable with said front mount and slidably engaging said first track, said zoom lens being characterized in the provision of a first stop section longitudinally movable with said front mount and a second stop section stationary relative to said barrel section, and in the path of movement of said first stop section and abutting said first stop section when said front mount is at the rearmost position thereof with said first follower being forward of the rear end of said track whereby the axial component of an impact imparted to said front mount bypasses said follower and track and is transmitted directly to said barrel section.

4,226,521
CAMERA APERTURE CONTROLLING BRAKE

Masahiro Kawasaki, Tokyo, and Yukio Takaoka, Asaka, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 26, 1978, Ser. No. 973,284
Claims priority, application Japan, Dec. 27, 1977, 52/178890[U]
Int. Cl.³ G03B 9/06
U.S. Cl. 354—271 **6 Claims**

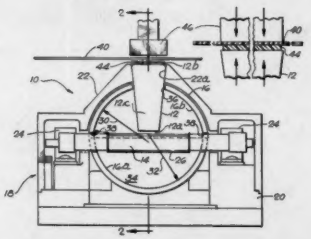


1. In an aperture auxiliary brake control device in a camera having a speed showing device operating association with a lens stopping-down operation, and the operation of said speed slowing device being terminated by interrupting a supply of current to an aperture control magnet to selectively employ various modes of operation including a shutter priority automatic exposure mode, the improvement comprising; a brake section for braking a brake disc secured to a part of said speed slowing device by interrupting the supply of current to an auxiliary brake magnet; and an auxiliary brake magnet control circuit, wherein in the shutter priority automatic exposure mode said brake disk is actuated prior to the operation of said speed slowing device being terminaled, and in other modes of operation the supply of current to said auxiliary brake magnet is interrupted following a predetermined period of time required to stop down the lens to a minimum aperture value thereof, whereby an auxiliary brake is selectively applied.

4,226,522
IMAGING DEVICE

Gerald F. Marshall, Grosse Pointe Woods, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Nov. 17, 1978, Ser. No. 961,691
Int. Cl.³ G03B 27/54
U.S. Cl. 355—1 **10 Claims**



1. Device for flash imaging at an imaging film plane an imaging film having a layer of an energy dispersible image forming material thereon, comprising: an energy source capable of emitting electromagnetic energy of an intensity sufficient to cause dispersion of the energy dispersible image forming material on the imaging film, an imaging mask at the imaging film plane for enabling electromagnetic energy from said energy source to be applied therethrough in a preselected pattern to the imaging film having the layer of an energy dispersible image forming material thereon, and electromagnetic energy collecting means associated with the energy source, said energy collecting means including a single, solid, one-piece, elongated, electromagnetic energy transmitting body for intercepting and transmitting electromagnetic energy directly from said energy source to the imaging mask, said body having an energy entrance facet and an energy exit facet each of which lies in a plane which is substantially parallel to the plane of the other and substantially transverse to the longitudinal axis of the energy transmitting body, said energy transmitting body further having opposed pairs of non-parallel side facets which diverge in the direction of the energy exit facet of the energy transmitting body, the spacing of the energy entrance and exit facets with relation to one another and the angle of inclination of the opposed pairs of side facets of the energy transmitting body with relation to the longitudinal axis thereof being such as to direct, collimate and shape the electromagnetic energy passing through the energy transmitting body and the imaging mask in a manner to provide maximum utilization and substantially uniform distribution of the electromagnetic energy at the imaging film plane whereby substantially the full intensity of the directed, collimated and shaped electromagnetic energy is applied to the imaging film through the imaging mask thereby enabling rapid and substantially uniform dispersion of the energy dispersible image forming material on the film to be attained in a preselected pattern.

4,226,523
IMAGING DEVICE

Herbert C. Ovshinsky, Oak Park, and Gerald F. Marshall, Grosse Pointe Woods, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Nov. 17, 1978, Ser. No. 961,692
Int. Cl.³ G03B 27/54
U.S. Cl. 355—1 **14 Claims**

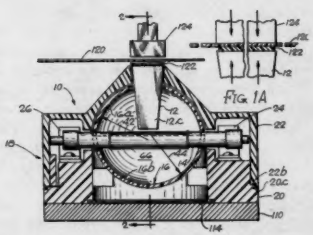


FIG. 1A

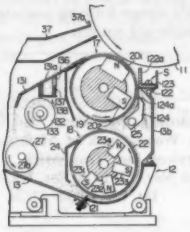
1. An imaging device for flash imaging, through an imaging mask at an imaging film plane, a dry-process imaging film having a layer of an energy dispersible image forming material on a surface thereof, comprising: an energy source capable of emitting electromagnetic energy of an intensity sufficient to cause dispersion of the energy dispersible image forming material on the imaging film, an imaging mask at the imaging film plane for enabling electromagnetic energy from the energy source to be applied therethrough in a preselected pattern to the imaging film having the layer of an energy dispersible image forming material on a surface thereof, electromagnetic energy collecting means associated with the energy source, said energy collecting means including energy transmitting means adapted to provide a direct path between the energy source and the imaging mask and serving to collect, direct, collimate and shape the energy emitted by the energy source to provide maximum utilization and substantially uniform area distribution of the electromagnetic energy at the imaging film

plane, said energy collecting means further including energy intercepting and reflecting means for receiving at least a portion of the energy source and the energy transmitting means and for directing electromagnetic energy from the energy source in the direction of the energy transmitting means, and support means for maintaining the energy transmitting means and the energy intercepting and reflecting means of the energy collecting means in a predetermined position with relation to one another, the energy source, and the imaging mask at the imaging film plane whereby substantially the full intensity of the directed, collimated and shaped electromagnetic energy is applied to the imaging film through the imaging mask to attain rapid and substantially uniform dispersion in a preselected pattern of the energy dispersible image forming material on the imaging film.

4,226,524
MAGNETIC BRUSH DEVELOPMENT APPARATUS FOR AN ELECTROSTATIC COPIER

Makoto Hashimoto, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 8, 1978, Ser. No. 958,725
Claims priority, application Japan, Nov. 19, 1977, 52-139139; Nov. 21, 1977, 52-139756
Int. Cl.[2] G03G *15/00, 15/09*
U.S. Cl. 355—3 DD **10 Claims**



1. In a magnetic brush development apparatus of the type comprising a plurality of magnetic rollers, each of which comprises a non-magnetic rotary sleeve and magnetic field generating means disposed in said non-magnetic rotary sleeve, and each of which successively transfers therebetween a magnetic developer carried on the surfaces of said sleeves for developing a latent electrostatic image on a photoconductor, wherein the improvement comprises means for forming a uniform magnetic brush comprising:

a developer regulating means for regulating the quantity of said magnetic developer on a first magnetic roller of said plurality of magnetic rollers by removing excess developer from the surface of the sleeve of said first roller, which first roller is disposed in close proximity to said photoconductor for transferring developer to and developing said latent electrostatic image;

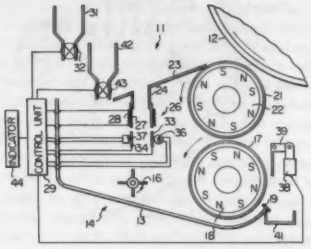
a second magnetic roller of said plurality of rollers; rotatable in the same direction as said first magnetic roller for supplying said magnetic developer to said first magnetic roller in a transfer region and disposed with a predetermined space between it and said first magnetic roller such that the excess developer removed by said developer regulating means is received on the surface of the sleeve thereof upstream of said transfer region for resupplying said developer to said region; and

said magnetic field generating means disposed in said first magnetic roller and said second magnetic roller are arranged so as to overlap the respective magnetic forces thereof in said transfer region in such manner as to remove an excessive amount of said magnetic developer from said region, through said space between said first and second magnetic rollers, on said sleeve of said second magnetic roller.

4,226,525
ELECTROSTATIC COPYING MACHINE

Koji Sakamoto; Seiichi Miyakawa, and Susumu Tatsumi, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 18, 1977, Ser. No. 843,108
Claims priority, application Japan, Oct. 19, 1976, 51-125388; Nov. 18, 1976, 51-138977; Nov. 18, 1976, 51-138978
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—14 D **8 Claims**



1. In an electrostatic copying machine including a photoconductive member and a developing unit for applying a powdered developing substance to the photoconductive member, the developing substance including carrier particles and toner particles, the improvement comprising:

first sensor means operatively connected to the developing unit for measuring the toner density of the developing substance in the developing unit;

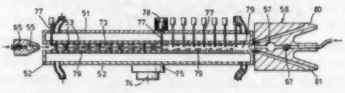
second sensor means operatively connected to the developing unit for measuring the developing ability of the developing substance; and

control means connected to the first and second sensor means for calculating the difference between the measured toner density and developing ability and producing a signal when the difference exceeds a predetermined value, the control means comprising means for maintaining one of the toner density and the developing ability constant.

4,226,526
TRANSPORT AND POSITIONING MECHANISM

Harry A. H. Spence-Bate, Morley, Australia, and Timothy Bain-Smith, Charing, England, assignors to Harry Arthur Hele Spence-Bate, Morley, Australia

Continuation-in-part of Ser. No. 838,724, Oct. 3, 1977, Pat. No. 4,176,947. This application May 31, 1979, Ser. No. 44,316
Claims priority, application United Kingdom, Oct. 4, 1976, 41118/76; Jun. 30, 1978, 25103/78
Int. Cl.[3] G03B *27/42, 27/62*
U.S. Cl. 355—53 **18 Claims**



1. A circuit board processing mechanism comprising two opposed plates, means for maintaining a cushion of gas on one of said plates to support a circuit board in a plurality of X and Y positions relative to a process axis intersecting said plates, said means comprising ducts formed in at least one plate and

arranged to direct a flow of gas for said cushion towards a space between the plates into which a said board is insertable, means for performing work on said board, said means located at the process axis, and means for moving the board across the plate to any of the plurality of X and Y positions.

4,226,527

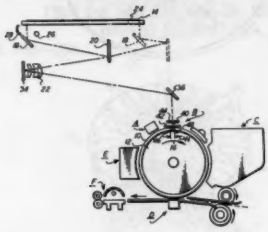
ANTI-STROBING FILTERS

William L. Lama, Webster, and Ned J. Seachman, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 3, 1979, Ser. No. 63,227

Int. Cl.³ G03G *15/22;* G03B *27/76*

U.S. Cl. 355—71 **12 Claims**



1. A machine having a document supported for illumination, a light source illuminating the document, with an irradiance defined as a function of time, $H_2(t)$ and having a fundamental frequency f_o

an optical path, the irradiance projected along the optical path

a photoreceptor moving at a predetermined speed v;

an aperture plate defining an aperture disposed near the photoreceptor, the irradiance profile at the photoreceptor being defined by the function $H=H_1(x)H_2(t)$ where $H_1(x)$ is the spatial irradiance profile across the photoreceptor, and

a transmission filter disposed near the aperture plate along the optical path wherein the transmission filter has transmission characteristics such that the Fourier transform of the function $H_1(x)$ evaluated at the lamp frequency f_o equals zero.

4,226,528

PHOTOGRAPHIC ENLARGING EASEL

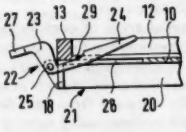
Walter Kremer, Bergneustadt, Fed. Rep. of Germany, assignor to Johannes Bockemuehl, Gummersbach-Derschlag, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 964,940

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1977, 2754193

Int. Cl.³ G03B *27/58*

U.S. Cl. 355—74 **2 Claims**



1. A photographic easel for holding photographic paper and the like, comprising a supporting member having a supporting surface which is arranged so that photographic paper can be placed on said supporting surface from outside; and ejecting means associated with said supporting member and movable relative to the latter between an operative position in which said ejecting means projects outwardly of said supporting surface in a direction transverse to the latter whereby the laminar material placed on said supporting surface is lifted from the latter, and an inoperative position in which said ejecting means fails to project outwardly of said supporting surface in said transverse direction, the ejecting means including an ejecting member which has two arms and is pivotable about an axis between said operative and inoperative positions, said ejecting member having a first arm located in the region of said supporting surface and a second arm arranged to be urged in two opposite directions, so that when said second arm is urged in one of said opposite directions said ejecting member is pivoted about said axis to said operative position whereby said first arm projects outwardly beyond said supporting surface in said transverse direction and lifts the laminar material therefrom, and when said second arm is urged in the other opposite direction said ejecting member is pivoted to said inoperative position whereby said first arm does not project outwardly beyond said supporting surface in said transverse direction, and the supporting surface having a cut-out, said first arm of said ejecting member being movable between said operative and inoperative positions through said cut-out of said supporting surface.

4,226,529

VIEWING SYSTEMS

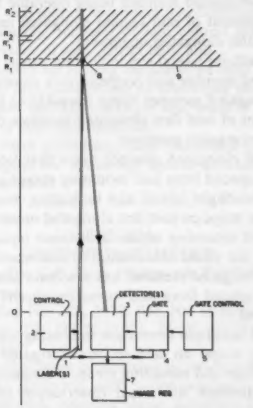
Herbert A. French, Emsworth, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Apr. 12, 1977, Ser. No. 787,042

Claims priority, application United Kingdom, Apr. 21, 1976, 16167/76

Int. Cl.³ G01B *11/26;* H04N *7/00*

U.S. Cl. 356—5 **9 Claims**



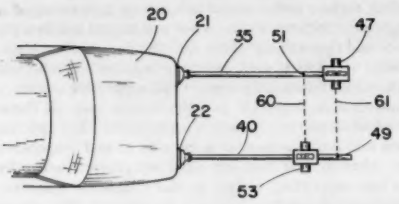
1. A laser-assisted viewing system including at least one laser arranged for repetitive pulsing, at least one detector to detect laser pulses after reflection or scattering from a scene, detector signal gating means to define two range intervals within the scene for viewing by the said system, means to register an image of any defined range interval, and switching means to repetitively interleaf said two defined range intervals from which the registered images are received whereby a target within a first of said two defined range intervals is alternately detected by reflection of transmitted energy and in silhouette by backscattering of transmitted energy.

4,226,530

METHOD AND DEVICE FOR INDICATING HEADLIGHT ALIGNMENT

Gilbert R. Broom, 11 Willow La., Schererville, Ind. 46375

Filed Oct. 10, 1978, Ser. No. 949,653
Int. Cl.[3] G01J 1/00
U.S. Cl. 356—121 2 Claims



1. A device for indicating alignment of a pair of headlights each with a forward-looking face comprising:

a first elongated member mountable cantileveredly to the forward-looking face of one headlight of a pair of headlights;

a second elongated member mountable cantileveredly to the forward-looking face of the other headlight of said pair of headlights;

mounting means operable to mount said first elongated member and said second elongated member to the forward-looking faces of said pair of headlights;

headlight vertical aim indicating means cooperatively associated with said first elongated member and said second elongated member being operable to indicate presence of said first elongated member in a horizontal plane and presence of said second elongated member in a horizontal plane;

first headlight lateral aim indicating means on said first elongated member and cooperatively associated with said second elongated member being operable to indicate lateral alignment of said second elongated member relative to said first elongated member;

second headlight lateral aim indicating means on said second elongated member and cooperatively associated with said first elongated member being operable to indicate lateral alignment of said first elongated member relative to said second elongated member;

said second elongated member has a first lateral aim mark thereon spaced from said mounting means a first distance;

said first headlight lateral aim indicating means includes a sight-line scope on said first elongated member and spaced from said mounting means a distance equal to said first distance for visual observation of said mark;

said first elongated member has a second lateral aim mark thereon spaced from said mounting means a second distance; and

said second headlight lateral aim indicating means includes a sight-line scope on said second elongated member and spaced from said mounting means a distance equal to said second distance for visual observation of said second mark;

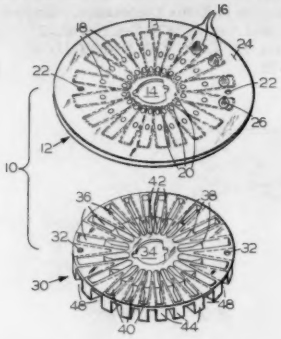
each slight-line scope includes a tube through which a person looks with each tube fixedly mounted to a separate one of said elongated members and extending generally perpendicularly thereto, said first elongated member has a distal end with a sight-line scope positioned thereat and with said second lateral aim mark located on said first elongated member but remotely from said distal end, said second elongated member has a second distal end with said first lateral aim mark positioned thereat and with a sight-line scope located on said second elongated member but remotely from said second distal end.

4,226,531

DISPOSABLE MULTI-CUVETTE ROTOR

Thomas O. Tiffany; Gilbert B. Manning, both of Spokane; Philip C. Thayer, Nine Mile Falls, and Chris M. Coelho, Veradale, all of Wash., assignors to Instrumentation Laboratory Inc., Lexington, Mass.

Filed Aug. 29, 1977, Ser. No. 828,609
Int. Cl.[3] G01N 1/10
U.S. Cl. 356—246 8 Claims



1. A disposable multi-cuvette rotor for use in an analytical photometer comprising

a one piece body member of injection molded transparent material that has a planar upper surface and defines a circumferential array of spaced, elongated, radially extending recesses, said planar upper surface defining the upper edge of each of said recess,

each said recess defining a first chamber and a second chamber disposed radially outward from said first chamber, and separator structure integral with said body member between said first and second chambers, said separator structure including a ramp surface that is inclined with respect to said planar upper surface and that forms the radial outer boundary of said first chamber and a vertical surface that extends perpendicularly to said planar upper surface and that forms the radial inner boundary of said second chamber, a first optical window integral with said body member in the bottom wall of said second chamber, and a further integral optical window in the radial outer wall of said second chamber, the inner surface of each said further optical windows extending perpindicular to said planar upper surface

the upper surfaces of all of said optical windows being parallel to and spaced the same predetermined distance below said planar upper surfaces; and

a one piece cover member of injection molded transparent material that has a planar lower surface parallel to and immediately adjacent said planar upper surface of said body member with a continuous seal extending around each said recess between said upper and lower surfaces to define an analytical cuvette,

a first circumferential array of ports in said cover member aligned with corresponding first chambers of said circumferential array of recesses in said body member,

a second circumferential array of ports in said cover member disposed radially outward from said first array of ports and aligned with corresponding second chambers of said circumferential array of recesses in said body member, and

a circumferential array of second optical windows integral with said cover member and disposed radially outward from said second array of ports and aligned with corresponding first optical windows, the lower surface of each said second optical windows being parallel to said planar lower surface of said cover member such that each pair of

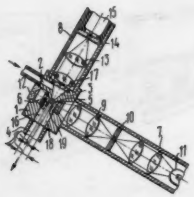
opposed aligned surfaces of corresponding first and second optical windows are parallel and define an optical path of precise and stable path length, the lengths of said optical paths in all of said second chambers being the same.

4,226,532

DEVICE FOR GRANULOMETRIC ANALYSIS OF PARTICLES IN FLUIDS

Viktor A. Berber, ulitsa Shelkovichnaya, 184, kv. 65; Evgeny S. Pervushin, ulitsa Shelkovichnaya, 182, kv. 71; Khafiz M. Murtazin, ploschad Degtyarnaya, 6 Internatsionalny proezd, 20, and Vladimir G. Kholin, ulitsa Shelkovichnaya, 184, kv. 53, all of Saratov, U.S.S.R.

Filed Jul. 12, 1978, Ser. No. 924,100
Int. Cl.³ G01N *15/02*
U.S. Cl. 356—336 **4 Claims**



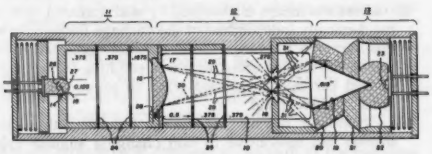
1. A device for granulometric analysis of particles contained in fluids, comprising: a feeding channel having an inlet and an outlet; a nozzle arranged at said outlet of said feeding channel; a receiving channel having an inlet and an outlet; its inlet communicating through said nozzle with said outlet of said feeding channel; said feeding and receiving channels being intended to contain a fluid pumped therethrough; said receiving channel having aligned windows formed therein for exposing the fluid to a light flux and arranged on opposite sides of the channel; a lighting means whose optical axis is spaced from and extends at an angle to the axis of said windows, said windows being positioned in a portion of said receiving channel closely spaced from said nozzle so that the optical axis passes through fluid flowing in a diverging flow path; a third window formed in one of said channels, intended to receive light reflected from particles contained in the fluid in the diverging flow path; a light-sensitive means whose optical axis extends through the point of intersection of the axis of said nozzle and the optical axis of said lighting means, said light-sensitive means being arranged opposite to said third window; the ratio between the diameters of an outlet of said nozzle and said receiving channel being in the range of ¼ to 1/7.

4,226,533

OPTICAL PARTICLE DETECTOR

Lawrence R. Snowman, Liverpool, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Continuation-in-part of Ser. No. 757,605, Jan. 7, 1977, abandoned. This application Sep. 11, 1978, Ser. No. 941,431
Int. Cl.³ G08B *17/10*
U.S. Cl. 356—338 **6 Claims**



1. A particle detector of optimized optical efficiency having restricted axial dimensions and using a dark field optical system in which a gaseous sample is illustrated and forward scattered light is collected in a zone centered about, but excluding on-axis light, and sensed to detect the presence of suspended particles in the sample, comprising:

A. a measurement chamber into which a gaseous sample is admitted, said chamber containing an entrance aperture, a zonal exit aperture containing a central stop, and an internal aperture, said chamber otherwise excluding light, said apertures and stop being perpendicular to the detector axis and centered thereon;

B. beamforming means comprising:

(1) a narrow band light source,

(2) a lens at said entrance aperture for projecting a beam of light from said source along said axis for illuminating suspended particles present in said chamber, said lens imaging said source in the plane of said internal aperture to a size smaller than said internal aperture to preclude beam impingement and to allow beam interception by said central stop, said beamforming lens being of an aspheric design calculated to correct spherical aberration for a point source at predetermined object and image distances and produce a sharp image of said light source;

C. said entrance aperture, said internal aperture and said central stop being arranged to prevent light scattered from said beamforming lens from impinging on said zonal aperture;

D. an output lens arranged in said zonal aperture for collecting scattered light, said output lens being blocked to the rays of said beam or scattered by said beamforming lens, but collecting forward scattered light when airborne scattering particles are in said measurement chamber, said output lens being a three element annular lens of high power having at least one aspheric surface calculated to correct spherical aberration for a point source at predetermined object and image distances and produce a sharp image of scattering particles present in said internal aperture, the central region of the more powerful face of each element of said output lens being truncated approximately to the obscuring diameter of said central stop to reduce the axial extent of said output lens, and

E. a light detector for sensing the scattered light collected by said output lens, said image of scattering particles being focused upon said light detector and being of the approximate size of said light detector,

said aspheric lenses permitting large numerical apertures and short focal lengths for maximum optical efficiency within a given axial dimension.

4,226,534

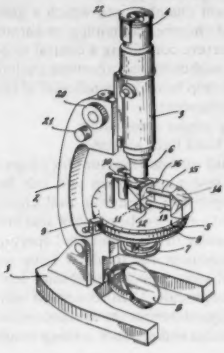
MICROPOLARIMETER

Julius A. Kuck, Cos Cob, Conn., assignor to Fairfield University, Fairfield, Conn.

Filed Nov. 13, 1978, Ser. No. 959,885
Int. Cl.³ G01N *21/03, 21/21, 21/23*
U.S. Cl. 356—367 **5 Claims**

1. A micropolarimeter comprising in combination a polarizing microscope provided with a conventional light source, microscope elements, rotating stage, polarizer, and analyzer, and a null point indicator, the microscope being adjusted to pass polarized light through the conventional opening in the stage and up through the microscope proper, a measuring element comprising two short capillary tubes mounted in two 45° prisms and one double 45° prism, the double 45° prism being oriented so that light entering a face is reflected at right angles and again at right angles back through the same face, the prisms having holes in their faces aligned with the hole from the face of the first prism to a hole in the face of the double prism and the second hole in the face of the double prism being aligned with the hole in the second 45° prism, capillary tubes of diameter to fit snugly in the holes and mounted to form an assembly with the capillaries parallel, and

parallel to the microscope stage, the prisms being oriented so that the first 45° prism is over the opening in the stage and the second 45° prism is aligned with the microscope, whereby polarized light passes up into the first 45° prism, is reflected at right angles through the first capillary tube, then reflected



twice in the double 45° prism and returned through the second capillary tube to the second 45° prism said null point indicating device is an anisotropic crystal mounted in a liquid on the upper face of said second 45 prism in the path of said light from said second capillary tube and reflected by said second 45 prism.

4,226,535

OBJECT MEASURING METHOD AND APPARATUS

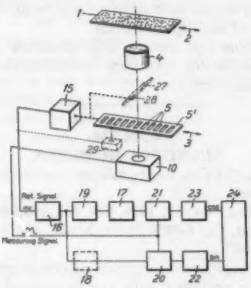
Knut Heitmann; Eckart Schneider, both of Wetzlar, and Heribert Lüssem, Braunfels, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Aug. 8, 1978, Ser. No. 931,959

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1977, 2736583

Int. Cl.[2] G01B *11/14*; H01J *39/12*

U.S. Cl. 356—373 **21 Claims**



1. Apparatus for measuring the movement of an object comprising:

(a) an optical imaging device for producing an image of said object;

(b) a grating structure positioned to receive the image of said object produced by said imaging device;

(c) drive means for producing a periodic relative movement between said grating structure and the image formed thereon;

(d) means for generating reference signals corresponding to said periodic relative movement;

(e) photoelectric receiving means positioned for receiving light from said grating structure corresponding to the image thereon, said photoelectric receiving means producing electrical rotating field signals;

(f) a control circuit connected for receiving said reference signals and said electrical rotating field signals for producing control signals indicative of the movement of said object with respect to a direction of movement at least approximately parallel to said relative movement; and

(g) a bi-directional counter connected to receive said control signals for indicating the movement of said object.

4,226,536

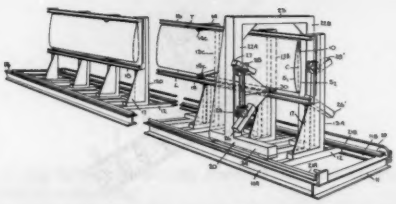
ELECTRO-OPTICAL CONTOUR MEASURING SYSTEM

Marc G. Dreyfus, 4 Arnold St., Old Greenwich, Conn. 06870, and Arnold Pellman, 30 Colony Ct., Stamford, Conn. 06905

Filed Feb. 23, 1979, Ser. No. 14,855

Int. Cl.[3] G01B *11/24*

U.S. Cl. 356—376 **12 Claims**



1. A system for accurately and rapidly measuring the surface contour of a shaped object, said system comprising:

A. a fixture for stably supporting said object with respect to a reference axis extending in a given direction;

B. a carriage movable in said direction on a track in a straight line path parallel to said reference axis, said carriage having a structural beam which extends at right angles to said axis and faces the surface of the object to be measured;

C. a triangulation rangefinder assembly borne by said carriage beam and constituted by a pivotally-mounted light beam illuminator and a pivotally-mounted automatic tracker, said illuminator and said tracker being rotatable about spaced pivot points on said carriage beam, the line extending between said pivot points representing a triangulation baseline having a known value;

D. motor means to advance said carriage in incremental steps along said track from one end of said object to the other; said carriage in the course of its movement along said track being subject to displacements which slightly distort the orientation of the rangefinder relative to the surface of the shaped object being measured;

E. means to render said assembly operative at each step position of said carriage to cause said illuminator to swing through a sector wherein said light beam impinges on said surface to produce a luminous spot thereon that scans in a path normal to said reference axis from one edge of the object to the other and to cause said tracker in response to the light reflected from said surface to follow said scanning spot;

F. means operatively associated with said illuminator and tracker to determine the changing angular values assumed by the illuminator and by the tracker in the course of each tracked scan to produce values representative thereof;

G. calibration means intercepted by said scanning spot and mechanically independent of the carriage for sensing said distortions in the range finder assembly orientation relative to the surface being measured resulting from stepping of said carriage along said track to product correction values therefor; and

H. a computer having said known baseline value stored therein and responsive to said changing angular values and to said correction values to compute by triangulation

the changing position of said spot on said surface in the course of a tracked scan and to thereby provide a contour reading of each scan, whereby the contour of the entire surface is determined upon the completion of carriage advance from one end of the object to the other.

4,226,537
ANALYTICAL CENTRIFUGE WITH IMPROVED SIGNAL/NOISE RATIO

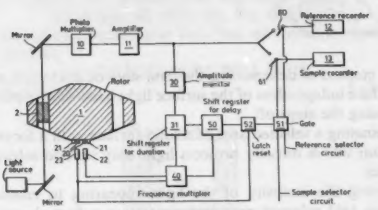
Edward E. S. Colley, Redhill, England, assignor to Fisons Limited, London, England

Filed Mar. 30, 1979, Ser. No. 25,323

Claims priority, application United Kingdom, Apr. 15, 1978, 14877/78

Int. Cl.³ G01N *21/01*

U.S. Cl. 356—427 **9 Claims**



1. A centrifuge assembly provided with means for determining the speed of angular rotation of the rotor and the angular orientation of the rotor and for measuring a characteristic of a material in a cell carried by the rotor characterised in that it is provided with means for comparing the amplitude and duration of signals generated from a cell being scanned with a desired amplitude and with the angular length of the cell being scanned and for rejecting signals which are of smaller amplitude and of shorter angular duration than the signals expected for the cell being scanned.

4,226,538
DEVICE FOR DETECTING IRREGULARITIES IN A MOVING SHEET MATERIAL

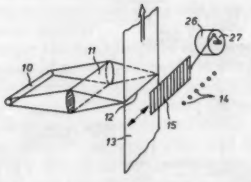
Walter P. Van Beeck, Sinaai, Belgium, assignor to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Jun. 29, 1978, Ser. No. 920,196

Claims priority, application United Kingdom, Jul. 1, 1977, 27672/77

Int. Cl.² G01N *21/32*

U.S. Cl. 356—430 **11 Claims**



1. A device for detecting speck-and streaklike irregularities in a moving sheet material, comprising

a source for directing electromagnetic energy across at least a portion of the width of the material,

a row of stationarily mounted radiation responsive photocells, each having a common predetermined length of field parallel to said row, that are substantially uniformly spaced transversely across the path of the sheet material to receive radiation from said source after modulation of said radiation by the moving sheet material,

a grating arrangement disposed in the path of the radiation to said photocells and serving to intercept and transmit radiation from linear periodically alternating areas in a direction parallel with the photocell row, and

means for displacing said grating arrangement to reverse the areas of transmission and interception, the linear periodicity of the grating being equal to 1/X times said field length of a photocell, wherein X is an integer at least equal to 5.

4,226,539
CYLINDRICAL BODY APPEARANCE INSPECTION APPARATUS

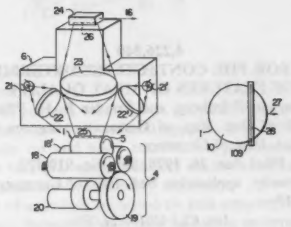
Yasuo Nakagawa; Hiroshi Makihira, both of Yokohama, and Toshimitsu Hamada, Tokyo, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 22, 1977, Ser. No. 863,345

Claims priority, application Japan, Dec. 24, 1976, 51/154883; Dec. 24, 1976, 51/154884; Apr. 8, 1977, 52/39508

Int. Cl.² G01N *21/48*

U.S. Cl. 356—445 **17 Claims**



1. A cylindrical body appearance inspection apparatus comprising:

a cylindrical surface appearance detecting device including rotating means for rotating a cylindrical body to be inspected around an axis thereof at a constant speed, and detecting means for optically detecting reflected light indicative of a surface condition of a small width base line band area, which is parallel to the axis of said cylindrical body, of a cylindrical surface of said cylindrical body being rotated by said rotating means and for repeating the sampling detection of the band area as the cylindrical body rotates to scan the entire surface of the cylindrical surface to thereby produce an image signal for each sampling;

an end surface appearance detecting device including first transporting means for transporting a plurality of cylindrical bodies sequentially with axes thereof being arranged in parallel to each other, detecting means arranged to face the opposite end surfaces of the cylindrical body transported by said first transporting means for optically detecting reflected light indicative of a surface condition of small width band areas on the opposite end surfaces extending in the direction transverse to the direction of transport of the cylindrical bodies and for repeating the sampling detection of the opposite end surfaces as the cylindrical body is transported to scan the entire area of each of the opposite end surfaces to thereby produce an image signal for each sampling;

second transporting means for transporting the cylindrical body between said cylindrical surface appearance detecting device and said end surface appearance detecting device from one to the other; and

test means for determining pass or fail or grade of any defect pattern which exists on the surface of the cylindrical body based on said image signals derived from said cylindrical surface appearance detecting device and said end surface appearance detecting device;

whereby the appearance of the cylindrical surface and the

opposite end surfaces of the cylindrical body is automatically and optically inspected and

wherein said detecting means of said end surface appearance detecting means includes an optical system for projecting collimated light beams onto the opposite end surfaces from opposite directions which are oblique and a solid-state image pickup device having photosensing elements arranged in at least one line with their photosensing surfaces arranged in parallel to the end surfaces to sense light rays reflected from the end surfaces of the cylindrical body in the direction transverse to the direction of transportation of the cylindrical body by said first transporting means.

4,226,540

METHOD FOR THE CONTACTLESS DETERMINATION OF FEATURES OF MEAT QUALITY

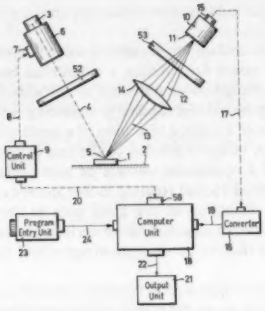
Hans M. Barten, Friedberg, and Frieder K. H. Pfister, Augsburg, both of Fed. Rep. of Germany, assignors to Pfister GmbH, Fed. Rep. of Germany

Filed Jun. 26, 1978, Ser. No. 919,872

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1977, 2728717

Int. Cl.³ G01N *21/55*

U.S. Cl. 356—445 **4 Claims**



1. A method for contact-free analysis of fat/meat quality of a meat product, comprising the steps of:

radiating the meat product with a scanning light source which creates a moving point of light on the meat product;

detecting continuous radiation emanating from the moving point of light on the test object and periodically converting a detected continuous radiation into definite radiation values corresponding to the point of light at scanned locations on the test object;

providing reference values which are known radiation values corresponding to fat and meat portions of a reference meat product;

comparing the reference values to the definite radiation values to create a first group of the definite values corresponding to fat portions and a second group of the definite values corresponding to meat portions of the meat product; and

comparing the two groups of values to determine fat/meat quality.

4,226,541

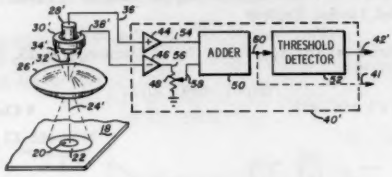
METHOD AND APPARATUS FOR SUPPRESSING THE EFFECTS OF SURFACE LIGHT SCATTER IN OPTICAL REFLECTIVE SCANNING SYSTEM

James G. Tisue, 7 Morning Sun Ct., Mountain View, Calif. 94043

Filed Aug. 11, 1978, Ser. No. 933,064

Int. Cl.² G01N *21/22*; G06K *7/14*

U.S. Cl. 356—446 **16 Claims**



1. A method of determining the data state of a selected area of a surface independent of the surface light back-scatter effect, comprising the steps of:

illuminating a selected area of a solid surface with a focused beam which directly projects light only on said selected area;

detecting the intensity of the light appearing to emanate from said selected area and generating a first electrical signal proportional thereto;

detecting the intensity of any light appearing to emanate from an area of said surface adjacent said selected area and upon which said focused beam does not directly project light and generating a second electrical signal proportional thereto; and

subtracting at least a portion of said second electrical signal from said first electrical signal to produce a compensated analog signal representing the actual reflectivity of said selected area.

4,226,542

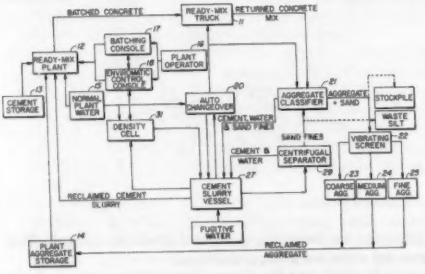
CEMENT SLURRY RECLAMATION SYSTEM AND METHOD

Melvin L. Black, and Robert C. Bowen, both of Pacifica, Calif., assignors to Weigh-Tech, Inc., Pacifica, Calif.

Filed Apr. 5, 1979, Ser. No. 27,328

Int. Cl.³ B28C *7/04*

U.S. Cl. 366—17 **61 Claims**



1. In a method of manufacturing concrete in which a slurry is formed by mixing returned concrete and water in a vessel and wherein said slurry is selectively added to fresh concrete mix, the improvement comprising the steps of:

(a) providing a slurry vessel having a volume sufficiently great to accomodate a predetermined fractional portion of the total average volume of water used to produce fresh

concrete during a predetermined production period, said fractional portion being less than unity;

(b) depositing aggregate-less returned concrete in said vessel during a production period;

(c) determining the specific gravity of said slurry during the next succeeding production period; and

(d) withdrawing said slurry from said vessel for admixture to fresh concrete mix at a rate selected in accordance with said specific gravity so that substantially all of the slurry is consumed within said next succeeding production period.

4,226,543

MIXING HEAD, ESPECIALLY FOR REACTIVE COMPONENTS SUCH AS THOSE IN THERMOSETTING SYNTHETIC RESINS

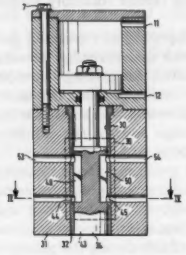
Klaus Schlüter, Münich, Fed. Rep. of Germany, assignor to Krauss-Maffei AG, Münich, Fed. Rep. of Germany

Filed Apr. 10, 1979, Ser. No. 28,825

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1978, 2815944

Int. Cl.³ B01F *15/02*; B01J *19/02*

U.S. Cl. 366—159 **5 Claims**



1. A mixing head for at least two flowable components, comprising:

housing means including means defining an internally located axially extending bore, means defining at least one pair of inlet ports opening into said bore transversely and connected to respective sources of said components, means defining at least one pair of return ports opening into said bore at a location axially spaced from said inlet port means, said return ports being connectible to respective reservoirs of said components and means defining an axial outlet located at the downstream end of said bore means for discharge of a mixture of said components delivered by said inlet ports;

means forming an elastic wall along said bore and having a variable inner diameter;

a control plunger axially shiftable in contact with said wall between a first position wherein said mixture is expressed through said outlet and a second position wherein said plunger is retracted from said outlet and said inlet ports open into a mixing chamber formed within said wall between said plunger and said outlet, said plunger being formed with a pair of bypass passages angularly spaced apart around said plunger and axially extending to connect each inlet port with a respective return port in said first position of said plunger, the elastic wall bearing upon said plunger between said passages for sealing said components against mixture between said plunger and the wall, said means forming said wall including a thin-walled elastic sleeve received in said bore, said housing means being formed between said passages with at least one pressurizable compartment closed by said sleeve, and

means for pressurizing said compartment to deform said sleeve against said plunger at least between said return ports.

4,226,544

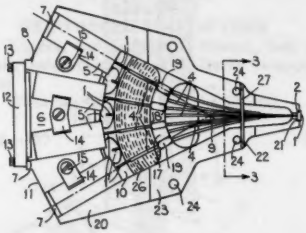
WIRE PRINTING HEADS

Keith B. Davenport, Sandhurst, and Ronald N. Piper, Whitton, both of England, assignors to Data Recording Instrument Company Limited, Staines, England

Continuation of Ser. No. 806,778, Jun. 15, 1977, abandoned. This application Sep. 29, 1978, Ser. No. 947,071

Int. Cl.³ B41J *3/12*

U.S. Cl. 400—124 **2 Claims**



2. A wire printer head including

a body member;

a plurality of printing wires, a first end of each wire effective for printing and a second end opposite said first end;

a wire guide on said body member supporting said wires adjacent said first ends in closely spaced relationship;

a support member on said body member;

a plurality of solenoids mounted on said support member in an arcuate formation and each including an armature;

said wires extending in a plurality of diverging curves from said wire guide to said solenoids and the second ends of the wires each being secured to the armature of a different one of the solenoids respectively;

a plurality of curved tubes; each wire extending through a different one of said tubes and each tube being preformed to a curvature substantially corresponding to the curve of the wire extending therethrough;

a tube guide plate on the body member adjacent the wire guide effective to locate one end of each of said tubes in alignment with the smooth curve of the wire extending therethrough; and

a further support member on the body member spaced from the tube guide plate and extending adjacent the tubes, said further support member having a plurality of open ended slots receiving the tubes, each of said slots being sufficiently large in depth and width to ensure that the tubes extend in positions relative to the further support member determined by the wires extending therethrough without constraint from the further support member and the tubes being secured in said positions relative to the further support member, one in each slot, by a casting of adhesive material in each slot.

4,226,545

ELECTROMAGNETIC DRIVE FOR RECORDING PINS IN A MATRIX PRINTER

Klaus Brandenburg, Kirchen-Wehbach; Hermann Richter, and Wendelin Weber, both of Siegen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 13, 1978, Ser. No. 951,226

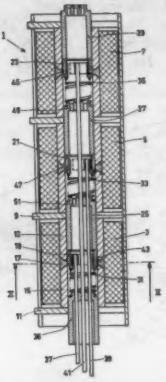
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1977, 2746601

Int. Cl.³ B41J *3/10*

U.S. Cl. 400—124 **2 Claims**

1. An electromagnetic drive for a recording pin in a matrix printer, comprising a cylindrical excitation coil which is arranged on a yoke and inside of which a cylindrical armature is displaceable, a recording pin being connected to said armature by means of a clamping sleeve which includes means for bias-

ing said clamping sleeve against the inner wall of the armature and which encloses the recording pin in a clamping manner, said clamping sleeve comprises an indentation which extends



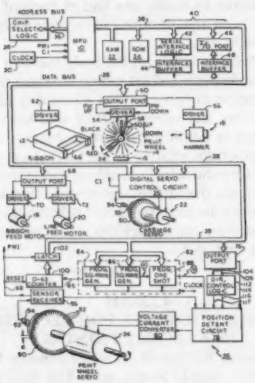
radially towards the center of said cylindrical armature and which encloses the recording pin in a clamping manner said indentation being spaced from said means for biasing.

4,226,546

PRINTER CONTROL SYSTEM

Mark H. Hoffman, Huntsville, Ala., assignor to SCI Systems, Inc., Huntsville, Ala.

Filed Dec. 6, 1978, Ser. No. 967,090
Int. Cl.[3] B41J *1/30;* **G05B** *19/24*
U.S. Cl. 400—144.2 **20 Claims**



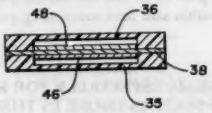
13. A device for controlling the velocity of a driven member, said device comprising means for indicating the present velocity of said member, means for indicating the desired velocity of said member, data storage means for storing values of acceleration corresponding to various values of the difference between said velocities in order to change the present velocity to said desired velocity during a predetermined period of time, and means for delivering signals corresponding to selected ones of said values of acceleration to a drive source to accelerate or decelerate said member.

4,226,547

PRINTING CARTRIDGE

Franklin C. Bradshaw, St. Paul; Thomas P. Connoy, Lino Lakes, and Michael W. Paque, Stillwater, all of Minn., assignors to Kroy Industries Inc., Stillwater, Minn.

Filed Jul. 7, 1978, Ser. No. 922,565
Int. Cl.[3] B41J *15/04, 32/00*
U.S. Cl. 400—613 **28 Claims**



1. A printing cartridge for supplying tape and ribbon in a printing apparatus having a printing station, said printing cartridge comprising:

a cartridge housing;

a spool of image carrying tape rotatably supported within said housing;

a spool of printing ribbon rotatably supported within said housing;

a guide means comprising an elongated guide member integrally joined with said cartridge housing and extending outwardly therefrom for guiding said tape and ribbon, one above the other such that a first flat face of said tape is in face-to-face registration with a first flat face of said ribbon, from said cartridge toward the printing station of said printing apparatus;

means within said guide means for creating a drag on said tape and ribbon for resisting free movement of said tape and ribbon through said guide means; and

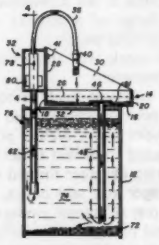
means for maintaining separation between said first flat faces of said tape and ribbon during the passage thereof through a substantial portion of the length of said elongated guide member.

4,226,548

PARTS CLEANING APPARATUS

Kuno W. Reith, San Francisco, Calif., assignor to Steam Stores, Inc., Saratoga, Calif.

Filed Aug. 21, 1978, Ser. No. 935,631
Int. Cl.[3] B08B *3/02, 3/10*
U.S. Cl. 401—188 R **8 Claims**



1. A parts cleaning apparatus for use in cooperation with a fluid container at least partially filled with a solvent, comprising:

a tray means disposed on top of said container and including a base portion provided with a drain hole, and four upwardly extending wall portions including a rear wall portion, a front wall portion and two side wall portions;

screen means disposed over said base portion;

a rear splash shield attached to said rear wall portion and extending upwardly from said base portion;

pumping means including

a substantially vertical sedimentation tube means having a first intake port and a first output port;

a magnetic pump means having a second intake port coupled to said first output port, and having a second output port, whereby said pump draws solvent through said sedimentation tube and into said second intake port and ejects the solvent from said second output port;

an output manifold disposed below said first intake port and above said second intake port and having a third intake port coupled to said second output port, and a third output port;

drain pipe means having a first end disposed through the drain hole of said base portion and having a second end disposed proximate the bottom of said container;

a U-shaped ridge means formed around said drain hole of said base portion for restricting fluid flow about said drain hole;

a cover means having a rectangularly-shaped top portion and three downwardly depending side portions, said cover means being adapted to cover said U-shaped ridge means and said drain hole, whereby sediment is restricted from flowing out of said drain hole by the cooperation between said ridge means and said cover means;

intake pipe means having a first end connected to said first intake port and having a second end disposed within the solvent of said fluid container, the second end of said intake pipe means being further from the bottom of said container than said second end of said drain pipe means;

first flexible hose means connected at a first end to said third output port; and

hollow brush means connected to a second end of said first flexible hose means,

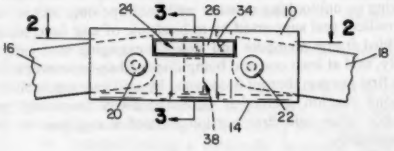
whereby solvent may be drawn from said container through said intake pipe, pumped through said flexible hose means and out of said hollow brush means by said pumping means to clean a part, after which the solvent drains through said screen means and down said drain pipe back into said container.

4,226,549

LOCKING HINGE JOINT

Richard L. Batt, Gardner, Mass., assignor to Collier-Keyworth Company, Gardner, Mass.

Filed Mar. 30, 1979, Ser. No. 25,328
Int. Cl.[2] F16C *11/10*
U.S. Cl. 403—92 **8 Claims**



4. A locking hinge joint comprising a bracket of U-shaped cross-section having a closed margin and open ends and an open side,

a first arm pivotally mounted within said bracket adjacent one end thereof,

a second arm pivotally mounted within said bracket adjacent the opposing end thereof,

said arms having lateral margins,

each arm being mounted to pivot to and from a first over center position in which it extends outwardly through an end of said bracket with its lateral margin bearing against the closed margin of said bracket in said over center position, and a second position in which it extends outwardly through the open side thereof, said arms and bracket being constructed and arranged so that the arms pass through dead center in moving to and from said first and second positions,

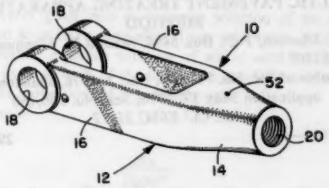
a locking element mounted on said bracket between the pivot mountings of said arms for movement transversely of said bracket to and from a first position in which it blocks pivotal movement of both said arms from their first position and a second position in which said arms are free to pivot.

4,226,550

REINFORCED PLASTIC YOKE

Kenneth S. Kupcak, and Rudolph F. Piecuch, both of Seven Hills, Ohio, assignors to Edward W. Daniel Company, Cleveland, Ohio

Filed Sep. 18, 1978, Ser. No. 943,002
Int. Cl.[3] F16C *11/00*
U.S. Cl. 403—157 **23 Claims**



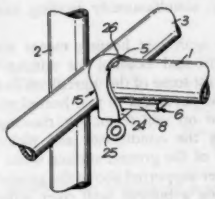
20. A reinforced plastic yoke for coupling opposed load members for transmission of axial tensile loads, said yoke comprising a plastic body having a collar portion at one end and a pair of spaced longitudinally extending portions integral with said collar portion, said collar portion having means for connecting same to one load member and said longitudinally extending portions having means for connecting same to the other load member, and one piece metal insert means embedded in said collar portion and longitudinally extending portions for reinforcing same, said insert means extending between said means for connecting to increase the strength of said plastic body along the effective load bearing length thereof.

4,226,551

CONNECTOR SYSTEM FOR ELONGATE MEMBERS

Harry Beasley, 164 Maidenway Rd., Paignton, Devon, England

Filed Jan. 3, 1979, Ser. No. 997
Claims priority, application United Kingdom, Jan. 10, 1978, 823/78
Int. Cl.[2] F16D *1/00, 3/00*; F16G *11/00*
U.S. Cl. 403—219 **6 Claims**



1. A connector system for interconnecting three elongate members comprising:

a first elongate member;

a support bracket attached at one end of said first elongate member;

engagement means on said bracket engaged with a second elongate member; and

a bearing face on said bracket engaged by a third elongate

member when the latter is located between the second member and the said end of the first member,

wherein the improvement comprises:

a collar element receiving the one end of said first member and having a retaining part which fits over the bracket and a wedge part which is engaged between said third member and the said one end of the first member, the axis of the collar being substantially parallel to that of the first member, and

a screw-threaded clamping bolt threaded in the retaining part and engaging the opposite face of the bracket from said bearing face,

whereby upon the tightening of the bolt against the bracket the wedge part of the collar is drawn between the third member and the said one end of the third member to clamp said members relatively to each other.

4,226,552

ASPHALTIC PAVEMENT TREATING APPARATUS AND METHOD

Frank F. Moench, P.O. Box 6484, Station B, Albuquerque, N. Mex. 87107

Continuation of Ser. No. 747,295, Dec. 3, 1976, abandoned. This application May 17, 1978, Ser. No. 906,450

Int. Cl.[2] E01C *23/12*

U.S. Cl. 404—92 **29 Claims**

1. In apparatus for reconditioning asphaltic pavement for road surfacing and the like, a combination comprising:

a frame supported on wheels for vehicular movement over a ground surface;

an elongated, generally cylindrical housing on said frame mounted for rotation about a longitudinal axis forming an inner chamber elevated above the ground surface having a material inlet at one end and a material outlet at the opposite end through which a loose asphalt-aggregate mixture delivered to said material inlet passes and is discharged through said material outlet, said chamber having a gas inlet at one end and a gas outlet opposite the gas inlet to pass gas through said chamber;

drive means operatively associated with said housing for rotating said housing about its longitudinal axis;

means for picking up said mixture from the ground surface while moving relative to the ground surface and delivering said mixture to said material inlet;

heating means operatively associated with said housing for heating gases passed through said gas inlet in heat exchange relation to said mixture and out said gas outlet to heat said mixture as said mixture is tumbled in said housing for uniformly, simultaneously heating and mixing said mixture;

means movable with said heating means and operatively associated with said housing for adding a conditioner replacing at least some of the ingredients lost by oxidation of the asphaltic pavement to said heated mixture; and

mixing apparatus on said frame for thoroughly and intimately mixing the conditioner and picked-up mixture independently of the ground surface while confined in a mixing chamber supported above the ground surface, said chamber having a bottom wall over which the conditioned mixture is moved above the ground surface between an inlet and an outlet and further having paddle blades disposed in an axially spaced and radially extending arrangement above the bottom wall between the inlet and outlet, to form a reconditioned mixture of a composition and consistency suitable for being rolled into a new mat of asphaltic pavement while moving relative to the ground surface,

said converting, picking up and mixing being coordinated in movement with one another relative to the ground surface.

4,226,553

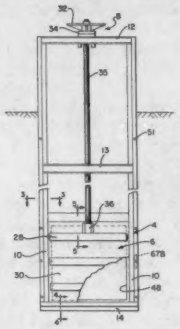
SLIDE GATES FOR WATER AND SEWAGE TREATMENT PLANTS

George E. Whipps, Athol, and Richard J. Bargeron, Buckland, both of Mass., assignors to Whipps, Inc., Athol, Mass.

Filed Feb. 23, 1979, Ser. No. 14,730

Int. Cl.[2] E02B *7/36*

U.S. Cl. 405—106 **12 Claims**



1. A slide gate mechanism adapted for mounting in functional relation with an opening in a wall, said gate comprising a rear frame assembly having first and second frame members for disposition along the sides of said opening and at least a third frame member extending between said first and second members for disposition along the bottom of said opening, a front frame assembly having first and second gate guide members for disposition along said first and second frame members and at least a fourth member extending between and interconnecting said first and second gate guide members, a gate assembly located between said first and second gate guide members, means associated with said first and second gate guide members for slidably engaging opposite edges of said gate assembly so that said gate assembly may be moved relative and parallel to said first and second gate guide members, and operating means carried by said front frame assembly and connected to said gate assembly and operable to selectively move said gate assembly in one direction or an opposite direction relative to said gate guide means so that said gate may be disposed in blocking or unblocking relation with said opening, and at least one resilient seal supported by at least one of said first, second and third frame members and slidably engaging said gate assembly, said at least one seal being disposed and constructed so that a first portion thereof is engaged by said gate assembly and a second portion thereof is deflected away from said gate assembly when said first portion thereof is engaged by said gate assembly.

4,226,554

METHOD AND APPARATUS FOR ABSORBING DYNAMIC FORCES ON STRUCTURES

John K. Vandiver, Lexington, Mass., and Shuhei Mitome, Kamakura, Japan, assignors to Massachusetts Institute of Technology, Cambridge, Mass.

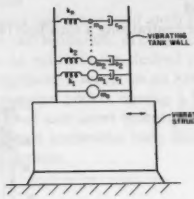
Filed May 23, 1978, Ser. No. 908,873

Int. Cl.[2] E02B *1/00*

U.S. Cl. 405—195 **8 Claims**

1. In a fixed structure that exhibits a dynamic response to wind, water and/or seismic excitation, the improvement which comprises: means for damping said dynamic response comprising a storage tank containing a liquid with a free surface, said storage tank being positioned on and supported by said structure, the shape of said tank and the nature of the liquid being

such as to effect a ratio of the uncoupled fundamental mode of the natural frequency of the tank containing liquid to the uncoupled fundamental mode of the natural frequency of the structure and the empty tank of between about 0.8 and 1.1.

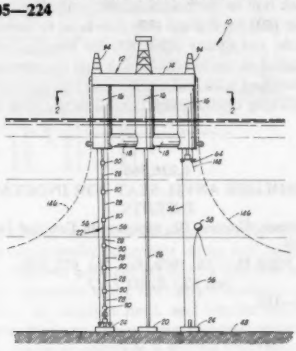


4,226,555

MOORING SYSTEM FOR TENSION LEG PLATFORM

Henry A. Bourne, Jr., and Mamdouh Salama, both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Dec. 8, 1978, Ser. No. 967,653
Int. Cl.[2] E02B *17/00*; B63B *35/44*
U.S. Cl. 405—224 **30 Claims**



1. A mooring system for a tension leg platform, comprising:
a tension leg, including a plurality of tubular leg elements having threaded connections between adjacent leg elements;
a means for connecting an upper end of said tension leg to said tension leg platform;
a means for connecting a lower end of said tension leg to an anchor means connected to the ocean floor, said lower end connecting means being hydraulically actuated; and
a means for communicating a hydraulic actuating signal from said tension leg platform to said lower end connecting means, said communicating means including an inner cavity of said tension leg.

4,226,556

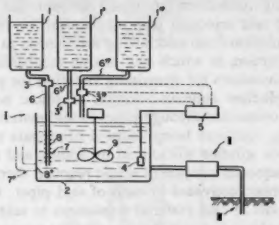
INJECTION PROCESS AND INJECTION APPARATUS FOR SOLIDIFYING A GROUND

Kenji Kayahara, Yokohama, Japan, assignor to Kyokado Engineering Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 855,463, Nov. 28, 1977, abandoned. This application Sep. 18, 1978, Ser. No. 942,892
Claims priority, application Japan, May 16, 1977, 52/56075
Int. Cl.[2] E02D *3/14*
U.S. Cl. 405—263 **17 Claims**

1. An injection process for the solidifying of a soft ground or preventing water-leaking ground from water leakage comprising the steps of

injecting a blend of water glass type grout thereinto, wherein said blend comprises a non-alkaline aqueous solution of silicic acid which is obtained by



mixing water glass into an aqueous solution of an acidic reactant so as to remove alkali from said water glass, said non-alkaline aqueous solution of silicic acid being prepared to meet both of the following conditions A and B:

A. the pH value thereof is 5 or less; and

B. a value of

$$\frac{H+}{[SiO_2]^n}$$

is 1×10^{-3} or less;

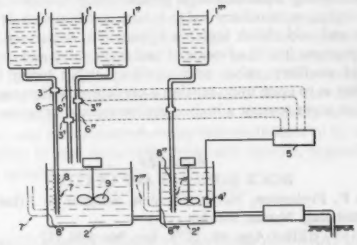
where [H+] is the molar concentration of hydrogen ions, $[SiO_2]$ is the molar concentration of silicon dioxide, and n is the molar ratio of said water glass, thereby solidifying the ground in sufficient strength without forming blocks of silica.

4,226,557

INJECTION PROCESS AND INJECTION APPARATUS FOR SOLIDIFYING A GROUND

Kenji Kayahara, Yokohama, Japan, assignor to Kyokado Engineering Co., Ltd., Tokyo, Japan

Division of Ser. No. 942,892, Sep. 18, 1978, which is a continuation-in-part of Ser. No. 855,463, Nov. 28, 1977, abandoned. This application Feb. 21, 1979, Ser. No. 13,655
Claims priority, application Japan, May 16, 1977, 52-56075
Int. Cl.[3] E02D *3/14*; G05D *7/00*; B01J *19/18, 19/26*
U.S. Cl. 405—269 **5 Claims**



1. An injection apparatus for solidifying a soft ground or preventing water-leaking ground from water leakage by injecting a blend of water glass type grout thereinto, wherein said blend comprises a non-alkaline aqueous solution of silicic acid which is obtained by mixing water glass into an aqueous solution of an acidic reactant so as to remove alkali from said water glass, said non-alkaline aqueous solution of silicic acid being prepared to meet both of the following conditions A and B:

A. the pH valve thereof is 5 of less; and

B. a value of $H+/(SiO_2)^n$ is 1×10^{-3} or less;

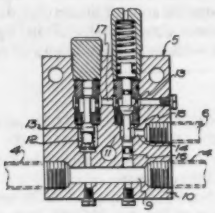
where (H+) is the molar concentration of hydrogen ions, (SiO_2) is the molar concentration of silicon dioxide, and n is the molar ratio of said water glass, said apparatus comprising a mixing mechanism for preparing a non-alkaline aqueous solution of silicic acid, an injection pipe mechanism to be provided in the ground for injecting said aqueous solution thereinto, and a conveying mechanism interposed between said mixing mechanism and said injection pipe mechanism for conveying said aqueous solution from said mixing mechanism to said injection pipe mechanism, in which said mixing mechanism comprises: material containers for containing materials for preparation of said non-alkaline aqueous solution of silicic acid; a mixing container connected through pipes to said material containers, said mixing container being adapted to prepare said non-alkaline aqueous solution silicic acid by adding and mixing water glass into aqueous solution of acidic reactant therein; a supplying mechanism provided in each of said pipes, for supplying said materials in said material containers to said mixing container, thereby to prepare the non-alkaline aqueous solution of silicic acid by adding and mixing water glass into aqueous solution of acidic reactant in the mixing container.

4,226,558

CONTROL SYSTEM

Lewis R. B. Bower; Philip W. Dudley, and John C. Smith, all of Wakefield, England, assignors to Fletcher Sutcliffe Wild Limited, Wakefield, England

Filed Feb. 16, 1979, Ser. No. 12,853
Int. Cl.³ E21D *23/12*
U.S. Cl. 405—302 **5 Claims**



1. A mine roof support control system comprising at least one hydraulically powered, self-advancing mine roof support, at least one hydraulically extensible chock leg forming part of said mine roof support, a high pressure fluid line, a fluid supply line extending from said high pressure line to said support, a main valve, an auxiliary valve interposed between said main valve and said chock leg(s), a bypass line connected to said high pressure line in advance of said main valve and extending to said auxiliary valve, said auxiliary valve being so constructed as to open upon sensing a predetermined pressure and to close upon sensing a higher predetermined pressure.

4,226,559

ROCK BOLTING APPARATUS

Sören P. Prebensen, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Aug. 31, 1978, Ser. No. 938,357
Claims priority, application Sweden, Aug. 31, 1977, 7709760
Int. Cl.³ E21D *20/00*
U.S. Cl. 405—303 **12 Claims**

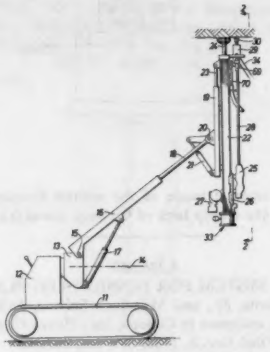
1. Rock bolting apparatus comprising:

a rock drill (**25**) and a bolt setting machine (**31**), both of which are mounted to be laterally power displaceable to an from their position for operation and are axially power feedable;

a magazine (**37**) for rock bolts, the rock bolts (**46**) being power displaceable to an operating position in alignment with a borehole made by the rock drill;

a magazine (**38**) for plates in which the plates (**55**) are stored separated from the rock bolts (**46**), said plates having a rock bolt receiving opening therein and said plate magazine (**38**) being located at the front end of the bolt magazine (**37**); and

a centralizer for centralizing a rock bolt (**46**) during insertion



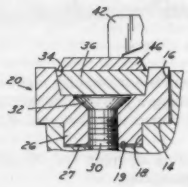
of a rock bolt in the borehole, the centralizer comprising a holder (**59**) for a plate (**55**) that is to be used with the rock bolt, and means (**60,62,63**) for locating said holder (**59**) relative to the borehole such that the opening of said plate is aligned with said borehole so that the plate with its bolt receiving opening will centralize the rock bolt.

4,226,560

TOOLHOLDER ANVIL SEAT FOR INDEXABLE INSERTS

Rolf H. Kraemer, Gurnee, Ill., assignor to Fansteel Inc., North Chicago, Ill.

Filed Dec. 26, 1978, Ser. No. 973,135
Int. Cl.³ B26D *1/12*
U.S. Cl. 407—101 **1 Claim**



1. In a toolholder combination for use with pellet type, polygonally shaped, throwaway cutting inserts which includes a removable anvil seat secured to the holder body having a recess to receive a cutting insert, that improvement which comprises:

(a) a circular pocket having a first diameter formed in said toolholder body and having a flat base surface and straight enclosing walls parallel to the axis of the pocket and a concentric circular well having a diameter less than said first diameter formed in said base surface within the walls of said pocket below said base surface,

(b) an anvil seat disposed on said toolholder having an insert recess in the top thereof and having first circular outer walls complemental to and interfitting with said enclosing walls of said circular pocket, an annular base surface to seat on said flat base surface of said pocket, and a circular depending projecting below said annular base surface to insert into and interfit into said well to positively and

selectively locate said seat on said toolholder at a desired lead angle,

(c) means to locate the desired orientation of said anvil seat in said well, and

(d) means to locate and retain said anvil seat in the desired orientation on said toolholder in conjunction with said last named means to maintain the desired orientation of said anvil seat comprising a screw on an axis concentric with that of said circular pocket having a head countersunk into the bottom of said insert recess and a threaded shank extending into said toolholder body through said circular depending projection.

4,226,561

MILLING MACHINE FOR USE IN RESTRICTED RECESSES

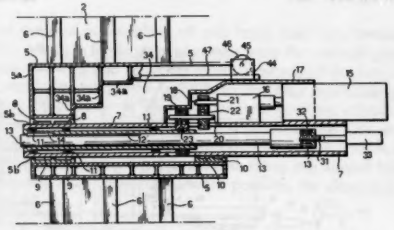
Francesco C. Ramusino, Milan, Italy, assignor to Innocento Santeustacchio S.p.A., Brescia, Italy

Filed Mar. 20, 1978, Ser. No. 888,240

Claims priority, application Italy, May 27, 1977, 24063 A/77

Int. Cl.³ B23C 5/26; B23Q 5/22

U.S. Cl. 409—232 **4 Claims**



1. In a milling machine including a base, an upright element which is horizontally adjustable along said base, a clamping platform disposed adjacent the base, a machine head which is vertically adjustable along the upright element, a tubular ram mounted in the machine head, said tubular ram being adjustable transversely to the upright element, toward and away from the clamping platform, a milling tool spindle adapted to rotate around its longitudinal axis, said milling tool spindle being rotatably supported in the tubular ram with which it is integral in translation, and a drive means for rotating the milling tool spindle and for integrally moving the ram and spindle toward and away from the clamping platform, the improvement which comprises integrally mounting the drive means which is utilized for rotating the milling tool spindle on the tubular ram on the inside of a housing which is integrally connected to said tubular ram, said machine head being provided with a cavity which is open at the end opposite to the wall end facing the clamping platform and extends along the longitudinal direction of displacement of said tubular ram for a distance not less than the traveling distance of the ram with respect to the machine head, said cavity being provided with a cross section which allows the movement of the driving means and respective housing on the inside thereof, said machine head being provided with an aperture located in the end wall facing said clamping platform for passage of the operative end of the tubular ram, the inner sides of the aperture being provided with first guide means for receiving said operative end of the tubular ram and second guide means for the displacement of the tubular ram, said second guide means provided between at least one inside wall of said cavity and the counterfaced wall of said housing which is integrally connected to the tubular ram, said second guide means longitudinally extending over a length greater than that of the first guide means provided at the inner sides of said aperature.

4,226,562

TOOLHOLDER

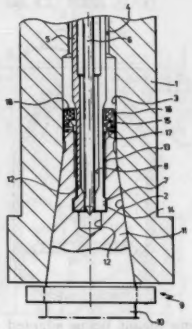
Herbert Schmid, Renningen, and Ernst Schmid, Ditzingen, both of Fed. Rep. of Germany, assignors to Schmid-Kosta KG, Renningen, Fed. Rep. of Germany

Filed Sep. 11, 1978, Ser. No. 941,356

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1977, 2741810; Dec. 13, 1977, 2755393

Int. Cl.³ B23C 5/26

U.S. Cl. 409—233 **8 Claims**



1. In a spindle-to-toolholder attaching and detaching mechanism for machine tools having a spindle comprised of an externally threaded draw bar for threaded attachment within a bore of a toolholder or a spindle provided with a chucking means having a radially expandable and contractable draw member provided along a peripheral edge thereof with a radially outwardly extending projection and a tension rod means for radially expanding said draw member, said tension rod being axially movable with respect to said draw member and said spindle, a toolholder selectively attachable to and detachable from either of said machine tool spindles, said tool holder comprising a centrally extending bore means for receiving either said externally threaded draw bar or said chucking means, said bore means being provided with an outwardly, radially extending annular groove so located and of a dimension sufficient to engage the radially outwardly extending projection of said draw member when said chucking means is inserted in said bore and said tension rod means is axially actuated to radially expand said draw member thereby securing said toolholder in said spindle, said groove being further located and of a dimension sufficient to allow said projection to be disengaged therefrom upon axial deactivation of said tension rod means to radially contract said draw member and wherein said bore means further includes a threaded section of a compatible dimension with said externally threaded draw bar such that said externally threaded draw bar is threadably attachable therein, said mechanism allowing said toolholder to be readily attachable to and detachable from said spindle, regardless of which spindle is employed.

4,226,563

AUTOMATIC ARTICLE-LAYING APPARATUS

Kouetsu Horikawa; Kiyosuke Mori, and Yukito Io, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 9, 1979, Ser. No. 10,980

Claims priority, application Japan, Feb. 16, 1978, 53-15928

Int. Cl.³ E04G 21/14

U.S. Cl. 414—10 **5 Claims**

1. An automatic article-laying apparatus, which is adapted to be positioned next to the terminal end of a horizontally rotatable conveyor and comprises:

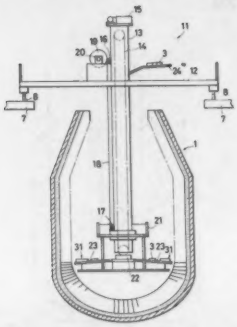
horizontally rotatable conveying means adapted to be posi-

tioned next to said conveyor, said conveying means carrying article holding means that projects sideward, below the plane on which an article is conveyed, so as to contact the side of the previously laid article;

driving means for horizontally rotating said rotatable conveying means;

means for pushing the article transversely, positioned close and parallel to said rotatable conveying means, said transverse pushing means being adapted to push the article away from said rotatable conveying means, at right angles to the traveling direction thereof and toward said article holding means; and

means for pushing the article longitudinally, positioned behind said article holding means and along said rotatable conveying means, said longitudinal pushing means being adapted to push the article, delivered from said rotatable conveying means, in the traveling direction thereof.



4,226,564

APPARATUS FOR FEEDING GLASS BATCH MATERIALS INTO A GLASS MELTING FURNACE

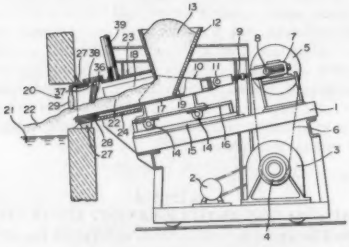
Shiro Takahashi, Yokohama, and Yoshihiro Tsuchimoto, Funabashi, both of Japan, assignors to Asahi Glass Company, Limited, Tokyo, Japan

Filed May 17, 1978, Ser. No. 907,014

Claims priority, application Japan, May 24, 1977, 52-59432; Jun. 14, 1977, 52-69429

Int. Cl.³ C03B *3/00*

U.S. Cl. 414—166 **9 Claims**



1. In a blanket feeder type apparatus for feeding glass batch materials into a glass melting furnace including a batch feeding opening, said apparatus comprising a hopper for receiving glass batch materials; a batch feeding trough disposed near an outlet of the lower part of the hopper to receive the glass batch materials flowed from the hopper; and a driving means for forwardly moving the batch feeding trough to a batch feeding opening of the glass melting furnace and for backwardly moving it to perform reciprocal movement, an improvement which comprises a sealing case having an outlet adjacent said batch feeding opening and extending from the hopper to said batch feeding opening of the glass melting furnace to cover the batch feeding trough; a shelter plate made of heat resistant material which is suspended from the upper end of said outlet of the sealing case so as to contact with the glass batch layer feed into the glass melting furnace; a swingable damper plate having a rear in a direction opposite said glass melting furnace, pivotally fitted to the upper part of the inside of the sealing case and having a lower edge being contacted with a glass batch layer on the batch feeding trough; and a positive pressure keeping means adapted for keeping the pressure in a space in said rear of the damper plate of the sealing case higher than that of an atmosphere in the glass melting furnace.

4,226,565

ENSILAGE STORING APPARATUS

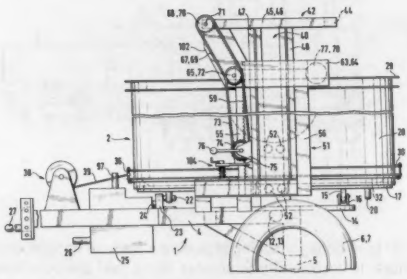
Xaver Lipp, Hohenstaufenstrasse 30, D 7090 Ellwangen, Fed. Rep. of Germany

Filed Nov. 16, 1978, Ser. No. 961,276

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2753288; Sep. 1, 1978, 2838149

Int. Cl.³ A01F *25/00*

U.S. Cl. 414—467 **12 Claims**



1. An apparatus for storing and transporting fodder and the like comprising

a storage tank having a side wall, a top wall and a bottom wall at least one of the walls being separable and wherein the top wall is openable to permit filling of the tank with fodder;

a vehicle having a frame; and

means on said vehicle for releasably supporting said tank for filling and transporting, said means including

tiltable support means for tilting said tank about a horizontal tilting axis;

means including a drive mechanism for rotating said tank about a vertical axis;

pressure roller means insertable into the upper end of said tank for compacting fodder therein as said tank is being filled;

vertically movable means for releasably supporting said pressure roller means and for elevating said pressure roller means as said tank is filled with fodder compacted thereby;

said pressure roller means being removable from said tank and from said vertically movable means after filling of said tank.

4,226,566

BEET HARVESTING MACHINE

Gale E. Maust, 8669 Pigeon Rd., Bay Port, Mich. 48720

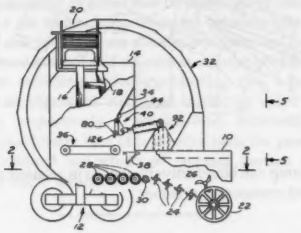
Filed Mar. 30, 1978, Ser. No. 891,613

Int. Cl.² B60P *1/36, 1/40*

U.S. Cl. 414—519 **22 Claims**

1. In a beet harvesting machine of the type in which beets are

dug, freed of dirt, and elevated to a truck or a holding tank, in which the holding tank has a backwardly and downwardly sloping front wall which terminates above a horizontal conveyor which, when actuated, functions to remove beets from said holding tank, the combination therewith in which the bottom portion of the front wall has the uppermost edge thereof hinged on a horizontal axis lying substantially in the plane of said front wall to provide a planar-form gate which, in its normal position, lies in the plane of said front wall and which is adapted to swing forward and backward from its



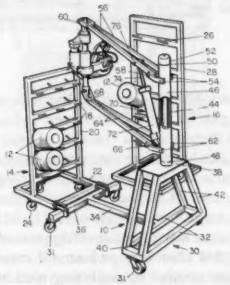
normal position in the plane of said front wall to a forward position where it forms an acute angle with the vertical plane through said axis, and in which means is provided for moving said gate from one extreme position to the other and holding it in either position or in any intermediate position whereby, when said gate is moved to a vertical position, the clearance between the bottom of said gate and the top of said horizontal conveyor is reduced to a minimum and, when it is moved from that position to the extreme forward position, the clearance is maximized.

4,226,567

APPARATUS FOR HANDLING BOBBINS

Laurence S. Van Orsdale, Jr., Taylors, S.C., assignor to D. W. Zimmerman Mfg., Inc., Madison Heights, Mich.

Filed Jun. 9, 1978, Ser. No. 914,019
Int. Cl.³ B66C *1/66;* B65H *67/00*
U.S. Cl. 414—555 **14 Claims**



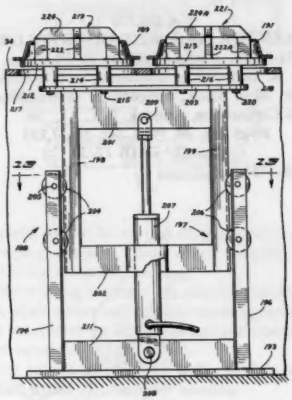
1. Bobbin-handling apparatus comprising a frame, an upright elongate member, means pivotally mounting said upright member on said frame for pivotal movement about a generally vertical axis, a bobbin-engaging unit, linkage means connecting said engaging unit and said upright member to enable generally vertical movement of said engaging unit with respect to said upright member, said linkage means including two generally parallel links pivotally connected to spaced portions of said upright member, an outer member pivotally connected to outer end portions of said links and spaced from said upright elongate member, said engaging unit being carried by said outer member, and a bracket carried by said outer member and pivotally connected to said bobbin-engaging unit to enable said engaging unit to pivot about a generally vertical axis.

4,226,568

PALLET POSITIONER

Alfred W. Christian, Woodstock, Canada, assignor to Hydrotile Canada Limited, Woodstock, Canada

Division of Ser. No. 753,526, Dec. 12, 1976, Pat. No. 4,118,165.
This application Jun. 30, 1978, Ser. No. 920,816
Int. Cl.³ B23B *21/00*
U.S. Cl. 414—589 **17 Claims**



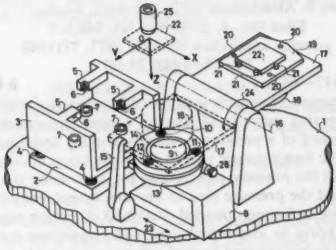
1. A pallet positioner for locating pallets in selected positions on a turntable comprising: a movable frame, support means movably supporting the frame for movement between first and second positions, means connected to the frame operable to selectively move said frame to the first and second positions, a pair of tables mounted on the frame, and a pallet guide and positioning structure mounted on each table to locate a pallet on the turntable, said frame movable to the first position to locate the pallets in selected positions relative to the turntable.

4,226,569

WAFER LOADING AND POSITIONING DEVICE

René Gerard, and Michel Lacombat, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 17, 1978, Ser. No. 897,537
Claims priority, application France, Apr. 20, 1977, 77 11909
Int. Cl.² F23Q *3/04;* F25B *11/00*
U.S. Cl. 414—737 **15 Claims**



1. A loading device for positioning a body having a flat face in a position such that said flat face coincides with a mechanically indexed reference plane, said device comprising: a mounting frame carrying mechanical indexing means defining said reference plane, a levelling stage for supporting said body,

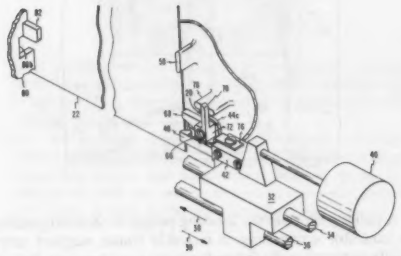
and fitting means for setting down said flat face in said position; said levelling stage comprising a base member, and a flat topped supporting member; said base member being provided with a cylindrical bore, and said supporting member having a spherical bearing surface slidably mounted within said cylindrical bore, said supporting member and said base member being clampable in fixed relation to each other; said levelling stage further comprising repulsion means for pushing said supporting member away from the bottom of said base member, and straining means, acting on one of said members for controlling the amount of clamping thereof.

4,226,570

BLOCKER FOR MAGNETIC DISKETTE GRIPPER

Joseph J. Holecek, Kasson; William B. Plummer, Rochester; Clarence R. Schwieters, Rochester, and Michael N. Zell, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,133
Int. Cl.³ G11B *17/22*
U.S. Cl. 414—751 **9 Claims**



1. A gripper assembly including:

a pair of clamp jaw portions movable toward and away from each other and resilient means urging said jaw portions together whereby they may be moved onto an article to embrace and frictionally grip the article between them, and

a blocker movable with respect to said jaw portions blocking entrance of an article between said jaw portions in one position of the blocker and allowing such entry of an article between said jaw portions in another position of the blocker.

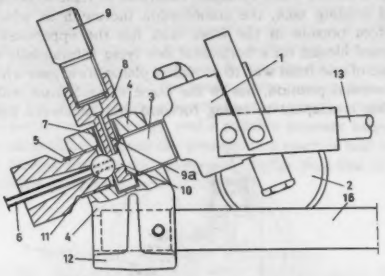
4,226,571

PRESSURE OIL INJECTOR

Sture Östling, and Stig Persson, both of Katrineholm, Sweden, assignors to Aktiebolaget SKF, Goteborg, Sweden

Filed Oct. 4, 1978, Ser. No. 948,419
Claims priority, application Sweden, 1977, 7711968
Int. Cl.³ F04B *21/00*
U.S. Cl. 417—63 **8 Claims**

1. A pressure oil injector assembly comprising an attachment and connecting member (4) having connecting means for a pump housing of a pressure medium pump (1) and a pressure pipe (6), the high pressure part of the pump being in communication with the pressure pipe, means for connecting the pump housing and the pressure pipe to the attachment and connecting member including threaded dowels (3, 5) which engage in threaded bores in said attachment and connecting member, said bores being opposed to each other, an insertable member adapted to seat in an aperture in said attachment and connecting member located between said threaded bores, said dowels adapted to be threaded toward one another in said bores to lock said insertable member therebetween, said threaded bores being arranged in a predetermined manner so that said one dowel connected to said pump may be selectively positioned in a predetermined angular position when the dowels lock said insertable member therebetween whereby the angular position



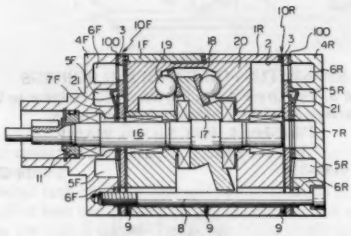
of the pump can be selectively chosen in relation to said attachment and connecting member.

4,226,572

VALVE ASSEMBLY FOR A MULTI-CYLINDER SWASH PLATE TYPE COMPRESSOR

Shozo Nakayama; Mitsuhiro Hattori, and Makoto Ono, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Jan. 24, 1979, Ser. No. 6,130
Claims priority, application Japan, Feb. 10, 1978, 53-14433
Int. Cl.³ F04B *1/18*
U.S. Cl. 417—269 **6 Claims**



1. A valve assembly for a multi-cylinder compressor of the type having: a pair of axially combined cylindrical cylinder blocks provided therein with a plurality of axial cylinder bores together with a double acting reciprocal compression mechanism, and; a front and a rear round end housing attached to a front and a rear end of the combined cylinder blocks, via a valve assembly, respectively, each of the front and rear housings having therein a low pressure refrigerant chamber, a high pressure refrigerant chamber, and an oil retaining chamber separated from one another by walls provided inside of each of the front and rear housings, comprising:

a valve plate having suction ports for connecting said low pressure refrigerant chamber of either one of said front and rear housings and said cylinder bores of said combined cylinder blocks, and discharge ports for connecting said high pressure refrigerant chamber of either one of said front and rear housings and said cylinder bores:

an intake reed valve means which is provided and is positioned between either one of said front or rear ends of said combined cylinder blocks and an inner face of said valve plate, said intake reed valve means being operable for openably closing said suction ports of said valve plate;

a discharge reed valve means disposed adjacent to an outer face of said valve plate, said discharge reed valve means

being operable for openably closing said discharge ports of said valve plate, and;

an integral gasket means made of a metallic plate having an inner and an outer face coated respectively with a resilient film, said gasket means being adapted to be arranged between said outer face of said valve plate and either one of said front or rear housings, and comprising an outermost, an intermediate and an innermost annular portion for applying hermetic seals to boundary portions of said low and high pressure refrigerant chambers and said oil retaining chamber of either one of said front or rear housings, and a rib means interconnected between said outermost and said intermediate annular portions, and between said intermediate and said innermost annular portions, said rib means including radially extending ribs which are arranged in alignment with said discharge valve means and have, respectively, a portion bent outwardly with respect to said outer face of said valve plate for permitting a predetermined magnitude of opening motion of said discharge valve means.

4,226,573

HYDRAULICALLY-OPERATED MACHINES

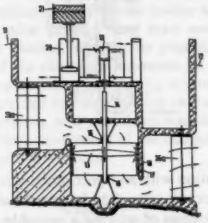
Alister U. Reid, Kyleakin, Norrels Drive, East Horsley, Surrey, England

Continuation of Ser. No. 759,118, Jan. 13, 1977, abandoned. This application Jul. 18, 1978, Ser. No. 925,688

Claims priority, application United Kingdom, Jan. 16, 1976, 1806/76

Int. Cl.[2] F04B *17/00;* **F16D** *21/02;* **E21D** *9/06*

U.S. Cl. 417—329 **3 Claims**



1. A hydraulically-operated low head machine of large diameter, in excess of 20 feet, adapted to receive water at an upper level from a relatively large reservoir and to discharge the water to a lower level, which includes: a hollow ballasted piston head carried upon a piston rod for movement in a concrete cylinder structure, said piston rod being mounted for vertical movement in guide bushes located above and below the piston head, said cylinder structure being formed of a wall having a thin flexible liner on a bed of grouting between said liner and a wall of a cavity in said concrete structure, said liner being positioned in said cylinder wall through relative movement in one stroke of said piston head to provide a uniform gap of minimum dimension relative to the piston head over its entire stroke, control valve means; said control valve means being disposed in control valve passage means; and said control valve passage means comprising, concrete inlet control valve passage means and gates for allowing water to flow from the upper level alternately to the upper and lower surfaces of the piston head, and concrete outlet control valve passage means for allowing water on the respective other side of the piston head to flow to the lower level.

4,226,574

MAGNETICALLY DRIVEN PUMP

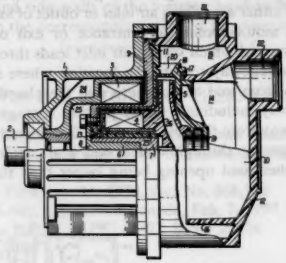
Guy J. Villette, Bilieu, 38850 Charavines, France

Filed Apr. 27, 1978, Ser. No. 900,481

Claims priority, application France, May 6, 1977, 77 14476

Int. Cl.[3] F04B *17/00*

U.S. Cl. 417—420 **3 Claims**



1. A magnetic motor-driven centrifugal impeller pump suitable for pumping corrosive fluids, which comprises:

a motor having a metallic housing;

an impeller housing having a cup-shaped end closure wall,

a metallic shaft within said impeller housing having one end fixedly secured to the bottom of said end closure wall and another unsupported end;

an impeller having a cylindrical hub rotatably mounted on said shaft within said impeller housing;

first permanent magnet means fitted on the outer circumference of said hub;

a corrosion resistant sleeve carried by said shaft and interposed between said shaft and said hub;

a coupling housing in axial alignment with the impeller housing;

a cup-shaped rotor within said coupling housing and surrounding said hub, said rotor being driven by the motor and having second permanent magnet means fitted around the inner circumference of the cup-shaped rotor closely spaced radially outwardly of said first magnet means for providing a magnetic coupling between the impeller and the cup-shaped rotor, said cup-shaped end closure wall having a cylindrical portion thereof interposed between said first and second permanent magnet means and an end flange portion fixedly secured to said coupling housing, said cup-shaped end closure wall being of a nonmagnetic responsive metallic material having a corrosion resistant coating;

a non rotating seal interposed between said sleeve and said coating for shielding said metallic shaft and said metallic wall from fluid communication.

4,226,575

WET PICK-UP VACUUM UNIT

Robert L. Hyatt, Tallmadge; Norbert H. Niessner, South Euclid, and Richard D. Sumser, Louisville, all of Ohio, assignors to Ametek, Inc., Kent, Ohio

Filed Jun. 6, 1979, Ser. No. 46,007

Int. Cl.[3] F04B *37/20*

U.S. Cl. 417—423 A **15 Claims**

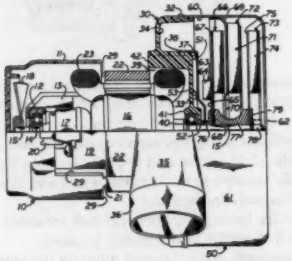
1. In a fan section for a wet pick-up type vacuum cleaner unit comprised of a motor section and a fan section, said motor section containing a motor and means for causing motor-cooling air to be drawn into said motor section through an entrance thereto and discharged through an exit therefrom,

said fan section having a fan chamber provided with an inlet port and containing a fan system which draws working air (by which cleaning and pick-up is performed) into said chamber through said inlet port and discharges the same

through an outlet remote from an entrance or exit for the motor-cooling air of said motor section,

said fan chamber having a wall provided with support means for a main bearing in which is journaled a shaft extending into said fan chamber and on which said fan system is mounted so as to provide a space between said bearing and the most closely adjacent fan of said fan system,

said fan section having a sealing air inlet which is spaced from either a working air inlet or outlet of said fan section or a motor-cooling air entrance or exit of said motor section and which sealing air inlet leads through a sealing air passageway toward the location where said shaft extends from said bearing into said fan chamber, said passageway including a baffle portion segregating the passageway from the balance of said fan chamber and having an opening through which said shaft extends into said chamber, said opening being larger than the portion of



said shaft passing therethrough to provide a substantially annular orifice through which sealing air, under normal operating conditions, may be drawn from said passageway into said fan chamber whereby liquid carried by said working air into said fan chamber and which might otherwise accumulate adjacent said bearing in the space between said bearing and the most adjacent fan is swept, by the sealing air passing through said orifice into said fan chamber, back into said fan chamber for discharge therefrom with said working air,

the improvement comprising:

check valve means preventing reverse flow of air and liquid carried thereby through said orifice, passageway, and sealing air inlet under an abnormal condition in which, but for said check valve means, resistance to discharge of said working air from said fan section outlet would exceed the resistance of reverse flow through said orifice and passageway and out of said sealing air inlet.

4,226,576

PROTEIN TEXTURIZATION BY CENTRIFUGAL SPINNING

William M. Hildebolt, Mickleton, N.J., assignor to Campbell Soup Company, Camden, N.J.

Filed Jan. 18, 1978, Ser. No. 870,525

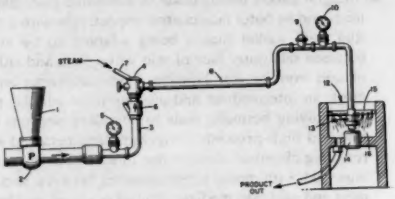
Int. Cl.[3] B29D *7/02*

U.S. Cl. 425—69 **7 Claims**

1. Apparatus for producing texturized monofilaments of protein material comprising:

(a) means for treating a protein slurry with injected gas at an elevated temperature and pressure;

(b) means for centrifugally spinning said protein material into monofilaments; and



(c) means for recovering texturized protein monofilaments in a collection zone.

4,226,577

APPARATUS FOR INJECTION MOLDING OF CONTINUOUS SLIDE FASTENER CHAIN

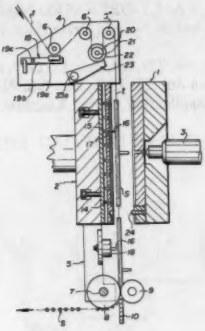
Mitsuo Sawada, 1-1 Horitaka, Kurobe-shi, Toyama-ken, Japan

Filed Jul. 3, 1979, Ser. No. 54,421

Claims priority, application Japan, Jul. 4, 1978, 53/92716[U]

Int. Cl.[2] B29D *5/00*; **B29F** *1/06*

U.S. Cl. 425—111 **2 Claims**



1. In combination with an injection molding apparatus of the type wherein a continuous slide fastener chain is manufactured by repeating the steps of moving a movable mold relative to a stationary mold to intermittently open and close the molds, injection molding a row of fastener elements on portions of a pair of stringer tapes introduced through and positioned between said molds when said molds are closed, and then interrupting the positioning of said stringer tapes and subsequently feeding the same when said molds are opened preparatory to an ensuing injection molding operation, the improvement which comprises:

means for forming a projection on a portion of a runner molded together with said row of fastener elements at the time of injection molding;

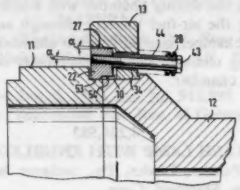
means for halting the introduction of said tapes into the spacing between said molds in response to detection of said projection; and

means for retracting and tensioning said tapes already introduced in the spacing between said molds in order to position within said molds the portion of said tapes on which rows of fastener elements are to be subsequently injection molded, the posterior end of said runner previously molded on said tapes together with the rows of fastener elements serving as a standard for the positioning of said tapes.

4,226,578
PELLET MILL

Werner Gröbli, Flawil, Switzerland, and Peter Zimmermann, Johannesburg, South Africa, assignors to Gebrüder Bühler AG, Switzerland

Filed Jan. 15, 1979, Ser. No. 3,766
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1978, 2852420
Int. Cl.[3] B29F *3/01*
U.S. Cl. 425—186 30 Claims

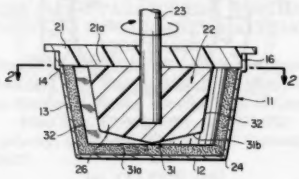


1. A pellet mill for extruding plastic masses and including a cylindrical pellet die, a rotatable die holder, and means for releasably clamping the die concentrically with an end face of the die holder, said means comprising an annular step recess at the end face of the die holder for receiving the end face of the die, the radially outer surface of the annular step recess diverging conically outwardly in the direction of the die and defining a guiding surface, a series of peripherally spaced apart clamping segments interposed between said guiding surface and the periphery of said die, the radially outer and inner surfaces of the clamping segments respectively matching the conically divergent form of the guiding surface and the curvature of the end face of the die, spring means adapted to urge the clamping segments into clamping engagement with both said guiding surface and said die and auxiliary means actuatable to generate forces to oppose the forces generated by said spring means for disengaging said clamping segments, both the forces generated by said spring means and said auxiliary means being directed at angles α to the rotational axis of the die holder which are in the range between a value greater than zero and the angle of divergence of said guiding surfaces to produce radially outward movement of the clamping segments on disengagement thereof, members connecting said spring means and clamping segments being provided for transmitting said spring forces to the clamping segments, said members and auxiliary means being adapted to allow movement of the clamping segments in the direction of both said forces.

4,226,579
CRUST FORMING DEVICE

Luther E. Glasgow, 2122 Lakeshore Ave., Oakland, Calif. 94606

Filed Aug. 14, 1978, Ser. No. 933,456
Int. Cl.[2] A47J *43/00*
U.S. Cl. 425—218 21 Claims

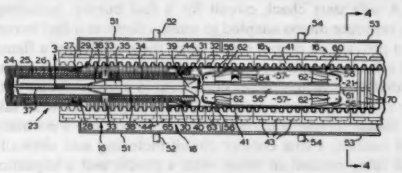


1. In a crust forming device for use with a container having a bottom wall and a peripheral side wall: a forming head having a bottom wall and an upstanding side wall, the bottom wall of the forming head including a first portion which throughout its radial extent is generally parallel to the bottom wall of the container and a second portion which is inclined upwardly from the first portion and upwardly and outwardly toward the side wall of the forming head, the side wall of the forming head having a portion immediately adjacent to the first portion of the bottom wall which conforms generally to the peripheral contour of the side wall of the container, and means connected to the forming head for positioning the same in the container for relative rotation of the forming head and the container with the bottom and side walls of the forming head in facing relationship with the corresponding walls of the container.

4,226,580
APPARATUS FOR PRODUCING THERMOPLASTIC TUBING

Gerd P. H. Lupke, 46 Stornoway Cres., and Manfred A. A. Lupke, 35 Ironshield Cres., both of Thornhill, Ontario, Canada

Filed Jan. 11, 1978, Ser. No. 868,702
Claims priority, application Canada, Feb. 7, 1977, 271188
Int. Cl.[3] B29C *17/07*; B29D *23/04*
U.S. Cl. 425—504 11 Claims



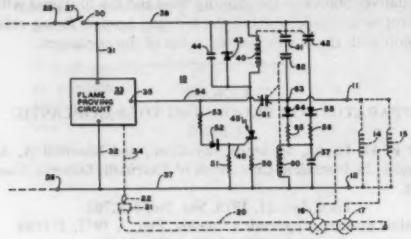
1. Apparatus for producing thermoplastic tubing, the apparatus comprising a pair of complementary mold assemblies each of which has an endless array of articulately interconnected mold blocks, drive means for driving the mold blocks of each mold assembly in synchronism with the mold blocks of the other mold assembly along a forward run in which the mold blocks of the mold assemblies are in cooperative interengagement to provide an axially extending tubular mold tunnel, and back along a return run, and an extrusion head disposed at the entrance to the tubular mold tunnel for forming a tube of thermoplastic material, wherein in the mold blocks first passages extend between the tubular mold tunnel defining faces and first ports in external faces of the mold blocks, and second passages extend between the first passages and second ports in external faces of the mold blocks, a stationary suction chamber which is connectible to a suction source being positioned to communicate through said first ports with said first passages during movement of the mold blocks along the forward runs, a stationary cooling chamber which is connectible to a source of cooling fluid being positioned forwardly of the suction chamber to communicate through said first ports with said first passages during continued movement of the mold blocks beyond the suction chamber along the forward runs, a stationary pressure chamber which is connectible to a source of pressurized fluid being positioned forwardly of the cooling chamber to communicate through said first ports with said first passages during further continued movement of the mold blocks beyond the cooling chamber along the forward runs, with closure means being mounted in the mold blocks for closing said second passages while the first passages communicating therewith are in communication through said first ports with the suction chamber and with the pressure chamber, and for opening said second passages while the first passages communicating therewith are in communication through said first ports with the cooling chamber and said second port of each second passage, and the closure means thereof, being positioned outside the chambers while the first passage or passages communicating with said second passage is in communication with the cooling chamber.

4,226,581

SAFE START CHECK CIRCUIT

Roger A. Schilling, West St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 22, 1978, Ser. No. 972,533
Int. Cl.[3] F23Q *23/00*
U.S. Cl. 431—26 10 Claims



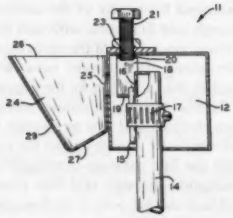
1. A safe start check circuit for a fuel burner, including: flame response means adapted to sense a flame at a fuel burner and to provide an output signal upon the presence of a flame; gated solid state switch means responsive to said output signal; said solid state switch means connected in a series circuit with flame relay means to a source of electric potential with said relay means having a normally open contact and a normally closed contact; a first control circuit including said normally closed relay contact in series with a diode, and a capacitor which are connected across said source to provide a time delay; control relay means responsive to a charge stored in said capacitor and including a normally open contact and a normally closed contact; a control relay holding circuit comprising said normally open relay contacts, a second diode, and said control relay connected across the said source; terminal means connected to said second diode and said control relay with said terminal means adapted to connect said source to valve means for said fuel burner through both said normally open relay contacts; and said normally closed contact of said control relay means including connection means to effectively short circuit said gated solid state switch means through said valve means until said control relay means is energized to thereby assure that a safe condition exists before said flame relay means normally open contact can close to energize said valve means.

4,226,582

PROCESS AND APPARATUS FOR THE INSTANTANEOUS COMBUSTION OF DIAFANOUS LIQUID PETROLEUM, DIESEL OR SIMILAR FUELS

Fausto C. Mendoza, Cumbres de Acultzingo #185, Lomas de Chapultepec, Mexico (10DF)

Filed Jun. 5, 1978, Ser. No. 912,881
Int. Cl.[3] H01M *4/70*
U.S. Cl. 431—239 7 Claims



1. A process for the instantaneous combustion of liquid diafanous petroleum, diesel, or similar fuels comprising:

feeding the fuel through a fuel conduit to an enclosed mixing chamber,

within said chamber, directing pressurized air across the outlet of the fuel conduit through an orifice so as to cause the pressurized air to expand, lower in pressure and achieve a high velocity precisely at the fuel conduit outlet to thereby suction the fuel from the conduit and disperse the fuel into small droplets and distribute the dispersed fuel homogeneously into the air to form an air-fuel mixture,

ventilating the mixing chamber with ambient air, and

projecting the air-fuel mixture through an opening in the mixing chamber into an ignition chamber,

said mixing chamber being substantially isolated from the ignition chamber.

4,226,583

PHOTOFLASH LAMP WITH KNURLED FOIL STRIP

Howard S. Painter, Linden, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 29, 1978, Ser. No. 974,299
Int. Cl.[3] F21K *5/00, 5/02*
U.S. Cl. 431—362 10 Claims

1. A photoflash lamp comprising:

a hermetically sealed, light-transmitting envelope;

a combustion-supporting gas filling in said envelope;

a corrugated strip of combustible foil disposed in said envelope, said foil having a knurled surface;

support means for said corrugated strip of knurled foil; and

ignition means disposed in said envelope in operative relationship with respect to said knurled foil.

4,226,584

ROTARY COMBUSTOR WALL

Tokihiko Ishikawa, Yokohama, Japan, assignor to O'Connor Engineering Laboratories, Inc., Costa Mesa, Calif.

Filed Apr. 2, 1979, Ser. No. 25,982
Int. Cl.[3] F27D *15/00*
U.S. Cl. 432—77 1 Claim

1. In a combustor having a plurality of water cooled pipes secured together to define an inner generally cylindrical surface and mounted for rotation about the axis of said surface, said pipes being secured so as to define a plurality of intermediate openings so that said cylindrical surface is gas porous, the improvement comprising, means defining a plurality of projec-

tions on said cylindrical surface creating a pattern to support burning material slightly spaced from said surface, said pattern being substantially open in the curved plane just within said cylindrical surface, and said means comprising short pins secured directly and in heat transfer relationship on said pipes of said cylindrical surface.

4,226,585

APPARATUS FOR THE PRODUCTION OF CEMENT CLINKERS FROM MOIST AGGLOMERATED RAW MATERIAL

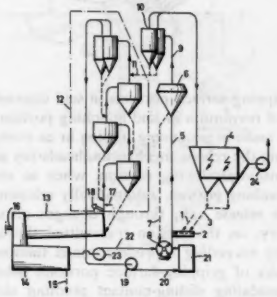
Herbert Deussner, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Wedag AG, Fed. Rep. of Germany

Filed Jun. 6, 1978, Ser. No. 912,995

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726138

Int. Cl.³ F27B 7/02

U.S. Cl. 432—106 **4 Claims**



1. An apparatus for the production of cement from moist agglomerated particles comprising:

preheating means,

a kiln receiving the output from said preheating means and arranged to calcine and sinter the particles into clinker,

cooler means receiving the output from said kiln and arranged to cool the clinker particles,

a suspension gas dryer including a relatively long vertically disposed conduit,

a comminuting device connected to the lower end of said conduit,

a sifting and separating device connected to the upper end of said conduit for separating fine from coarse particles,

means for delivering hot exhaust gases from said kiln into said suspension gas dryer, and

means for delivering the fine particles from said sifting and separating device into said preheating means.

4,226,586

METHOD AND APPARATUS FOR THE THERMAL TREATMENT OF FINE-GRAINED MATERIAL WITH HOT GASES

Kunibert Brachthauser, Bergisch-Gladbach, and Horst Herchenbach, Troisdorf, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Wedag AG, Fed. Rep. of Germany

Filed Aug. 11, 1978, Ser. No. 932,902

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1977, 2736607

Int. Cl.² F27B 7/02

U.S. Cl. 432—106 **6 Claims**

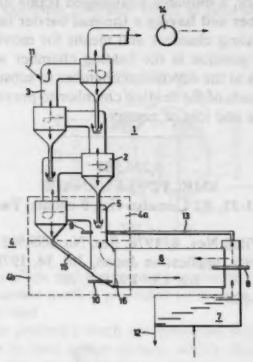
1. An apparatus for the thermal treatment of fine-grained material with hot gases comprising

a suspension gas heat exchanger having a plurality of stages of progressively higher temperatures in the direction of material flow,

a rotary kiln,

conduit means connecting the hottest stage of said heat exchanger with said rotary kiln,

means within said conduit means defining a first combustion zone,



means for introducing rapidly oxidizing fuel components into said first combustion zone,

means in said rotary kiln defining a second combustion zone, and

means for introducing slowly oxidizing fuel components into said second combustion zone.

4,226,587

HEATING SYSTEM FOR VACUUM COATING APPARATUS

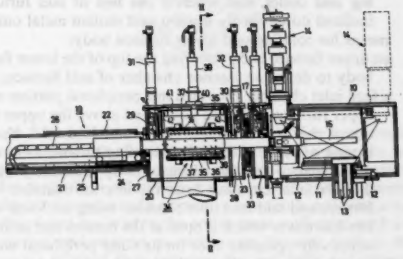
Hans Aichert, Hanau am Main; Otto-Horst Hoffmann, Rodenbach; Friedrich Stark, Langenselbold, and Herbert Stephan, Bruchköbel, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Nov. 22, 1978, Ser. No. 963,061

Claims priority, application Fed. Rep. of Germany, May 10, 1978, 2820286

Int. Cl.³ F27B 9/14

U.S. Cl. 432—122 **4 Claims**



1. In an elongated vacuum coating apparatus having a deposition chamber, the improvement comprising: a pass-through heating device comprising means including walls forming a heating chamber having an inlet and an outlet along the longitudinal axis of the vacuum coating apparatus, at least one heating means inside the heating chamber, means disposed parallel to the longitudinal axis of the vacuum coating apparatus and forming a thermal barrier between the heating means and the walls of heating chamber, movable means disposed transverse to the longitudinal axis of the vacuum coating apparatus for forming a thermal barrier at the inlet and the outlet of

the heating chamber when a substrate is to be heated therein; a substrate rack; and transport means for moving the substrate rack along the longitudinal axis of the vacuum coating apparatus into the heating chamber for heating and therethrough into the deposition chamber for deposition comprising a cantilevered transport shaft having the substrate holder connected at one end thereof, a movable box-shaped frame disposed in the heating chamber and having a thermal barrier facing the interior of the heating chamber and means for moving the frame into a closing position in the heating chamber when the substrate holder is in the deposition chamber to substantially close the sides and ends of the heating chamber to prevent a decrease in temperature and loss of energy.

4,226,588

SMELTING FURNACE

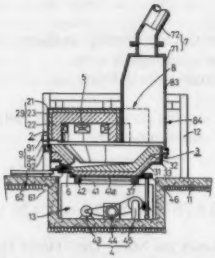
Tadao Ohara, 1-21, #2 Uematsu-cho, 8-chome, Yao City, Osaka 581, Japan

Filed Nov. 8, 1978, Ser. No. 958,905

Claims priority, application Japan, Jul. 14, 1978, 53-86566

Int. Cl.³ F27B 9/16

U.S. Cl. 432—138 **6 Claims**



1. A smelting furnace, comprising:

a lower furnace body for containing molten metal supported rotatably, said lower furnace body being formed generally in the shape of a substantially circular dish having a bottom bed, and having an upper opening, said lower furnace body comprising at a lower portion thereof a normally-closed molten metal outlet and means for selectively opening said outlet, and wherein the bed of said furnace is inclined downwardly toward said molten metal outlet;

means for rotating said lower furnace body;

an upper furnace body covering the top of the lower furnace body to define an interior chamber of said furnace;

a feed inlet chamber provided in a peripheral portion of said upper furnace body and positioned above the upper opening of the lower furnace body, said feed inlet chamber having opposite side walls extending downwardly to the upper edge of the lower furnace body to laterally separate the feed inlet chamber from the interior chamber of the furnace and said feed inlet chamber being enclosed with a box-like cover which is open at the bottom and includes a selectively openable door on its outer peripheral wall for introducing material into the furnace;

a burner mounted on the upper furnace body; and

exhaust means attached to the upper furnace body for releasing combustion waste gas.

4,226,589

ORTHODONTIC HEADGEAR RELEASE ASSEMBLY

Paul E. Klein, 601 First St., Lake Oswego, Oreg. 97034

Filed Aug. 25, 1977, Ser. No. 827,727

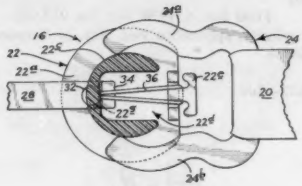
Int. Cl.³ A61C 7/00

U.S. Cl. 433—5 **2 Claims**

1. Safety-release tension-applying mechanism for operative interposition between an end of an orthodontic facebow and an adjacent end of a headstrap and the like for the facebow, said mechanism comprising

a first mechanism part including an attaching portion having a convex circular surface expanse of revolution including a pair of spaced, generally opposing gripping-surface portions, and

a second mechanism part including a infinitely changable tension-producing portion having a changable-geometry concave circular surface expanse of revolution including a pair of spaced, generally opposing gripping-surface portions which, through changes in geometry, are complementarily fittable against and releasably engagable with



said gripping-surface portions in said convex surface expanse of revolution in said attaching portion in said first part to assist in producing tension in an overall assembly including the release mechanism, headstrap and facebow, said tension-producing portion, when so engaged with said attaching portion, automatically releasing therefrom along a release axis, through changes occurring in its geometry, on the tension transmitted through such an assembly exceeding a predetermined tension level, said two pairs of gripping-surface portions, when engaged, accommodating sliding-contact pivoting about an axis substantially normal to said release axis.

4,226,590

DEVICE IN DENTAL SUCTION APPARATUS FOR CONNECTING AND HOLDING SUCTION NOZZLE TUBES AND/OR FOR FILTERING

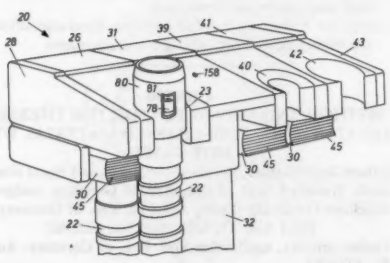
Hans-Joachim Hofmann, Geradstetten, Fed. Rep. of Germany, assignor to Dürr-Dental KG, Bietigheim, Fed. Rep. of Germany

Filed Mar. 24, 1978, Ser. No. 889,854

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1977, 2713320

Int. Cl.³ A61C 19/02

U.S. Cl. 433—28 **23 Claims**



1. Dental suction apparatus comprising a plurality of modules assembled side-by-side to constitute an assembly, each of said modules having a suction duct extending from one side to the other and connecting with the suction duct of at least one other module to constitute a main suction duct connected to suction producing means, each of at least two of said

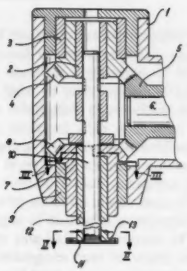
modules having means for attachment of a suction nozzle tube and with duct means connecting said suction nozzle tube with said main suction duct, and further having means for removably holding a suction nozzle, a suction nozzle tube connected with said attachment means and a nozzle on said tube, valve means for shutting off said suction nozzle tube from said suction duct and means associated with said nozzle holding means controlling said valve means to shut off said suction nozzle tube from said main suction duct when the respective nozzle is held by said holding means.

4,226,591

CONTRA-ANGLE HEAD FOR DRIVING TWO DENTAL TOOLS

Henri Leonard, Besancon, France, assignor to Micro-Mega S.A., Besancon, France

Filed Apr. 21, 1978, Ser. No. 898,779
Claims priority, application France, Jun. 20, 1977, 77 19547
Int. Cl.[3] A61C 1/12
U.S. Cl. 433—133 **3 Claims**



1. A contra-angle dental handpiece comprising a housing having a hollow head portion, first and second bushings in said head portion of the housing in axial alignment with one another and spaced axially apart, first and second hollow bevel pinions rotatably supported externally respectively by said first and second bushings in axial alignment with one another and spaced apart, said pinions facing one another, first tool-holding means in said first hollow pinion and rotatable therewith, second tool-holding means in said second hollow pinion and rotatable therewith, a first tool having a shaft portion which extends through said second pinion and said second tool-holding means and has an end portion engaged by said first tool-holding means to rotate said tool, a second tool having a hollow shaft through which the shaft of said first tool extends, said shaft of said second tool being engaged by said second tool-holding means to rotate said second tool, said first and second tools having head portions adjacent one another, a drive shaft rotatable in said housing with its axis perpendicular to the axis of said first and second pinions and a third bevel pinion fixed on said drive shaft and engaging both of said first and second pinions to drive said pinions in opposite directions and thereby rotate said first and second tools in opposite directions.

4,226,592

ZERO-DEGREE POSTERIOR TEETH FOR A LOWER AND AN UPPER DENTURE

Josephus Schreinemakers, Maarheeze, Netherlands, assignor to Dental Holding N.V., Willemstad, Netherlands Antilles

Filed Oct. 16, 1978, Ser. No. 951,589
Claims priority, application Netherlands, Oct. 21, 1978, 7711568
Int. Cl.[3] A61C 13/08
U.S. Cl. 433—197 **13 Claims**

1. Zero-degree posterior teeth for a lower and an upper denture, wherein opposite posterior teeth interact at least substantially in line-surface contact, wherein

(a) the contour at the level of the active surface of the posterior teeth closely resembles the contour of natural posterior teeth;

(b) in each pair of opposite posterior teeth the lingual or palatal contour section of one posterior tooth is provided with a line shaped masticatory rim and the buccal contour section of this posterior tooth is provided with a masticatory plane, while the palatal or lingual contour section of the opposite posterior tooth is provided with a masticatory plane and the buccal contour section of this opposite posterior tooth is provided with a line shaped masticatory rim; and

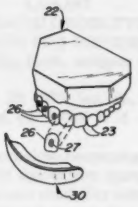
(c) the posterior teeth are provided with evacuation channels in their active surface, which channels originate near the line contact between opposite posterior teeth, their depth gradually increasing towards their end at the contour, so that the line-surface contact at the contour is only interrupted by the ends of the evacuation channels.

4,226,593

APPARATUS AND METHOD FOR APPLYING DENTAL VENEER

Morton Cohen, 1555 W. Main St., Norristown, Pa. 19401, and Elliott Silverman, 4829 Atlantic Ave., Ventnor, N.J. 08406

Filed Apr. 16, 1979, Ser. No. 30,005
Int. Cl.[3] A61C 5/00
U.S. Cl. 433—217 **14 Claims**



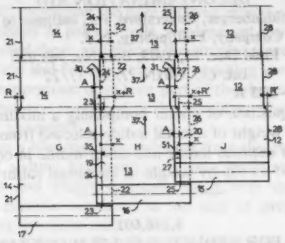
1. The method of applying a plurality of separate veneers to respective teeth of a patient, which method comprises; making a dental cast of the patient, shaping a plurality of veneers each for generally conforming congruent facing engagement with the labial contour of a respective cast tooth, applying a hardenable fluent material to the entire inner surface of each veneer, placing said veneers in position on the cast teeth to express excess material from between the cast teeth and veneers, removing the excess material, applying removable attachment means on the outer side of each veneer, applying a molding material into conforming engagement with the dental cast and veneers to define a mold having the veneers attached by said attachment means, removing the mold and attached veneers from the dental cast together with the hardenable material hardened to contours precisely conforming to the cast teeth, applying the mold and attached veneers to the patient's teeth to properly position the veneers in precise congruent conforming engagement with the patient's teeth, securing the positioned veneers to the patient's teeth, removing the mold while leaving the veneers secured to the patient's teeth, and removing the attachment means from the veneers.

4,226,594

METHOD FOR THE HEAT-TRANSFER PRINTING OF A TEXTILE MATERIAL

Henry Renaut, Roubaix, France, assignor to Societe Anonyme dite: Anciens Ets P. Lemaire & Cie, Roubaix, France

Filed May 31, 1978, Ser. No. 911,139
Int. Cl.[2] D06B *1/10*; B41M *5/26*
U.S. Cl. 8—471 9 Claims



1. In a method of continuous heat-transfer printing of longitudinal textile material which comprises superposing on one side of said textile material a plurality of transversely juxtaposed longitudinal belts of inert heat-shrinkable carrier material having thereon sublimable dyes which define a motif, and passing said textile material with said belts thereon continuously through a heating zone to cause sublimation of said dyes and their transfer from said carrier material to said textile material, the improvement which comprises laterally positioning said belts of carrier material in advance of said heating zone with contiguous edges of said belts overlapping one another by an amount equal to one-half the amount of shrinkage which each of said belts undergoes over its width owing to the heating of said belts in said heating zone, whereby upon passage of said textile material and carrier belts through said heating zone, said belts shrink laterally so that edges of adjacent belts abut and the motifs carried by said belts precisely join to form a continuous motif extending across the width of said textile material.

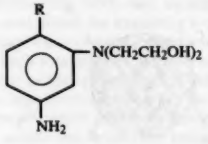
4,226,595

OXIDATION HAIR-COLORING PREPARATION BASED UPON N,N-BIS-(β-HYDROXYETHYL)-m-PHENYLENEDIAMINES

David Rose, Hilden; Edgar Lieske, Düsseldorf, and Peter Busch, Erkrath, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Dec. 21, 1978, Ser. No. 972,012
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1977, 2758203
Int. Cl.[2] A61K *7/13*
U.S. Cl. 8—406 16 Claims

1. An oxidation hair coloring composition consisting essentially of, as coupling agent at least one compound selected from the group of N,N-bis-(β-hydroxyethyl)-m-phenylenediamines having the formula I



I

wherein R represents hydrogen or an alkoxy group, the alkyl portion of which contains one to four carbon atoms, and the water-soluble hair compatible organic or inorganic salts thereof; and a water-soluble developer therefor, said developer and said coupling agent being present in the molar range of 2:1 to 1:2.

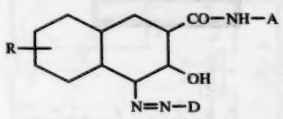
4,226,596

PROCESS FOR PRINTING UNIONS

Richard Peter, Basel; Hans D. Kirner, Pratteln, and Rolf Gehrlein, Muttenz, all of Switzerland, assignors to Rohner AG Pratteln, Switzerland

Filed Nov. 8, 1978, Ser. No. 958,781
Claims priority, application Switzerland, Nov. 11, 1977, 13825/77
Int. Cl.[3] D06P *3/82*
U.S. Cl. 8—532 17 Claims

1. A process for printing unions consisting of mixtures of fibers which can be coloured with disperse dyestuffs and fibers which can be coloured with reactive dyestuffs, characterized by using a printing paste containing at least one finely dispersed, water-insoluble azo dyestuff of the formula:



(I)

which is not prepared in the printing paste and which has a melting point between 220° and 300° C. and wherein D is a phenyl radical free from sulfo and carboxyl groups and bearing at least one electrophilic substituent and optionally up to two low molecular weight alkyl and/or alkoxy groups, R is hydrogen, a halogen atom or an optionally substituted alkoxy group and A is a phenyl radical which can be substituted by one or two optionally substituted alkyl and/or alkoxy groups and/or one halogen atom as well as at least one reactive dyestuff at least one non-ionic surfactant, and by applying the printing paste to the unions in a manner known per se.

4,226,597

USE OF 2,4,4,4-TETRACHLOROBUTYL ACETATE AS A DYE CARRIER FOR DISPERSE DYES

Richard L. Doerr, Orange, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Jun. 29, 1979, Ser. No. 53,579
Int. Cl.[3] D06P *1/16*
U.S. Cl. 8—582 4 Claims

1. A dye carrier composition comprising a dye carrier and at least one emulsifier, said dye carrier comprising 2,4,4,4-tetrachlorobutyl acetate and said emulsifier being from about 5% to about 50% by weight of said dye carrier.

4,226,598

METHOD AND APPARATUS FOR WET TREATMENT, ESPECIALLY TREATING WITH LYE SOLUTION AND MERCERIZING, OF KNITTED TUBULAR FABRIC

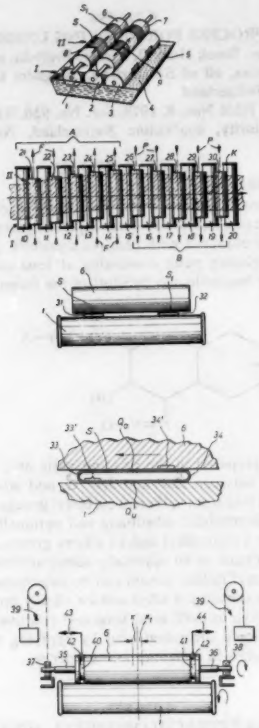
Günter Schiffer, Krefeld, Fed. Rep. of Germany, assignor to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,806
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1978, 2807312
Int. Cl.[2] D06M *1/02*; D06B *7/10, 3/34*
U.S. Cl. 8—125 10 Claims

1. A method of wet treatment, especially treating with lye solution and mercerizing, of knitted tubular goods using rollers respectively spaced from one another, which method includes the steps of:

passing said tube through the space between adjacent rollers while maintaining contact with said rollers, said tube at any given moment having two parallel straight cross sectional portions;

imparting to one of said two respectively straight portions of the tube cross section a movement directed substantially in the longitudinal direction of said tube; and



imparting to the other respectively straight portion of the tube cross section a movement directed substantially in the transverse direction of said tube.

4,226,599

REMOVAL OF HEPARIN FROM HEPARIN-CONTAINING BLOOD PLASMA SAMPLES USING A TRIETHYLAMINOETHYL CELLULOSE TABLET

James R. Butler, Morris Plains; James E. Turner, and Frank W. Goodhart, both of Morristown, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 931,032, Aug. 4, 1978. This application Jun. 20, 1979, Ser. No. 50,355

Int. Cl.[3] **G01N** *31/00*

U.S. Cl. 23—230 B **5 Claims**

1. A method for removing substantially all heparin from a heparin-containing blood plasma test sample which comprises:

A. adding to 1 milliliter of plasma sample a diagnostic tablet comprising from about 5.4 to about 10 parts by weight of granular microcrystalline cellulose per part by weight of fibrous triethylaminoethyl cellulose, said tablet being formulated to provide from about 5 to about 26 mg of triethylaminoethyl cellulose per milliliter of plasma sample;

B. agitating (A) for a time sufficient to disintegrate the tablet and distribute the fibrous triethylaminoethyl cellulose throughout the plasma sample and permit the adsorption of heparin;

C. centrifuging (B) to remove substantially all of the insoluble triethylaminoethyl cellulose heparin complex formed in the plasma sample, together with uncomplexed tablet ingredients;

thereby obtaining a substantially heparin-free blood plasma sample suitable for coagulation testing.

4,226,600

MERCURY CONTAMINATION INDICATOR AND DECONTAMINATION AID

James W. Seidenberger, Royersford, Pa., assignor to J. T. Baker Chemical Company, Phillipsburg, N.J.

Filed Dec. 13, 1978, Ser. No. 969,020

Int. Cl.[3] **G01N** *21/78, 31/22*

U.S. Cl. 23—232 R **6 Claims**

1. A composition of matter comprising a mixture of about 5to 95% by weight of a metal iodide selected from the group consisting of cuprous iodide and silver iodide in combination with about 95 to 5% by weight of elemental sulfur.

4,226,601

PROCESS FOR REDUCING SULFUR CONTAMINANT EMISSIONS FROM BURNING COAL OR LIGNITE THAT CONTAINS SULFUR

Robert H. Smith, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 3, 1977, Ser. No. 756,195

Int. Cl.[2] **C10L** *9/10, 5/00, 5/12*

U.S. Cl. 44—10 D **8 Claims**

1. In a process wherein a sulfur containing coal or lignite is burned, the improvement which comprises:

(a) admixing pulverized coal or lignite with at least one inorganic material selected from the group consisting of (i) an oxide of sodium, potassium, calcium or barium; (ii) a hydroxide of sodium, potassium, calcium or barium; (iii) a carbonate of sodium, potassium, calcium or barium; and (iv) dolomite; and

(b) thereafter burning the admixture of said pulverized coal or lignite and said inorganic material in conventional combustion equipment at a combustion bed temperature of less than about 3000° F. when said inorganic material is a sodium or potassium compound, less than about 2200° F. when said inorganic material is a calcium compound and less than about 2600° F. when said inorganic material is a barium compound.

2. The process of claim **1** wherein said inorganic material is finely divided and is mixed with said coal or lignite to form an intimate admixture.

3. The process of claim **2** wherein said intimate admixture is formed into pellets or briquettes prior to said burning.

4,226,602

METHOD OF CONTINUOUSLY PRODUCING RESINOID ABRASIVE WHEELS FOR CUTTING HARD MATERIALS

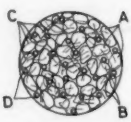
Heijiro Fukuda, 123, 3-chome, Umegaoka, Nagaokakyo, Kyoto, Japan

Filed Dec. 20, 1978, Ser. No. 971,570

Claims priority, application Japan, Dec. 22, 1977, 52-155291

Int. Cl.[2] **C09K** *3/14*

U.S. Cl. 51—296 **16 Claims**



1. An improved method of continuously producing a resinoid abrasive wheel for cutting hard materials comprising

the steps of preparing pore forming granules having predetermined mechanical strength and containing a substance thermally decomposable at a baking temperature for the production of the resinoid wheel, the thermally decomposable substance being selected from the group consisting of starch and funori, kneading the pore forming granules with abrasive grains and a thermosetting synthetic resin binder to prepare an abrasive composition, molding the abrasive composition into a block, heating the block by a high frequency heater, rolling the heated block containing the pore forming granules into a sheet by a multiplicity of pairs of rolls, blanking out a circular piece from the rolled sheet, and baking the circular piece to cure the binder therein and form pores in the resulting abrasive wheel by the decomposition of at least part of the thermally decomposable substance contained in the granules, wherein the improvement comprises:

(a) adding a blowing agent selected from the group consisting of sodium hydrogen carbonate, amyl acetate, butyl acetate and diaminobenzene, along with the thermally decomposable substance in the step of preparing pore forming granules; and

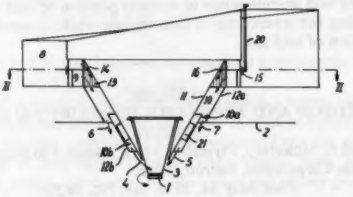
(b) forming pores by the decomposition of at least part of the thermally decomposable substance contained in the granules containing the blowing agent and by the decomposition of the blowing agent contained in the granules while curing the binder contained in the circular sheet in the baking step, the pores being larger than the pore forming granules and located where the pore forming granules were present.

4,226,603

GAS DISTRIBUTION DEVICE FOR THE SUPPLY OF A PROCESSING GAS WITH ADJUSTABLE FLOW DIRECTION TO AN ATOMIZING CHAMBER

Finn H. Larsson, Tastrup, and Christian Schwartzbach, Malov, both of Denmark, assignors to A/S Niro Atomizer, Soborg, Denmark

Filed Aug. 3, 1979, Ser. No. 63,885
Claims priority, application Denmark, Aug. 17, 1978, 3639/78
Int. Cl.[2] B01D *47/16*
U.S. Cl. 55—260 **5 Claims**



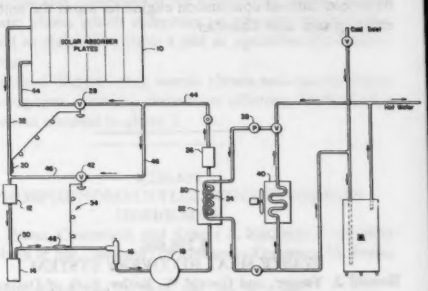
1. A gas distribution device for supplying a processing gas to an atomizing zone around an atomizing device arranged centrally in an atomizing chamber, comprising a horizontal spiral supply duct for said processing gas, said duct having an annular mouth extending in rotational symmetry around the axis of the chamber, and two conical guide walls extending around and above the atomizing device, said guide walls limiting a space communicating with said mouth, guide vanes being provided in said mouth for imparting a change of direction to the gas stream from a mainly purely tangential flow in the spiral duct into a rotating flow with a smaller tangential velocity component in the space between the conical guide walls, wherein the improvement comprises two separate sets of stationary vanes positioned relatively close to and overlying each other in the mouth, one of said sets being shaped to deflect the gas stream stronger to a direction with a considerably lower tangential velocity component than the other set and a damper being arranged along the mouth to be adjustable in the height direction for controlling the ratio of the portions of the gas stream in the spiral duct conducted into each of the two vane sets.

4,226,604

METHOD AND APPARATUS FOR PREVENTING OVERHEATING OF THE SUPERHEATED VAPORS IN A SOLAR HEATING SYSTEM USING A REFRIGERANT

Frederick A. Weis, Englewood, Colo., assignor to Solar Specialties, Inc., Denver, Colo.

Filed May 14, 1979, Ser. No. 38,399
Int. Cl.[3] F25B *27/00, 27/02;* F25D *41/00*
U.S. Cl. 62—2 **9 Claims**



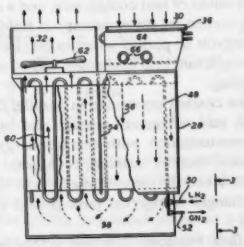
1. In a solar heating system wherein a mixture of refrigerant in liquid and vapor form is circulated through a solar collector which takes heat from the atmosphere to convert the refrigerant to a superheated vapor preparatory to delivering it to a compressor, and wherein means responsive to the temperature of the superheated vapor leaving the collector is employed to control the amount of the mixture admitted to the latter, the improved method for reducing any excess superheat contained in the superheated vapors which comprises: sensing the degree of superheat contained in the superheated vapors entering the compressor, using any excess of superheat detected above a preselected maximum as an input operative to actuate means connected to bypass the refrigerant mixture around the collector and mix same directly with the overheated vapors, and employing the refrigerant mixture thus bypassed to cool down the overheated vapors to the preselected maximum temperature chosen for the superheated vapors being fed to the compressor.

4,226,605

FLAMELESS VAPORIZER

Frank Van Don, Fountain Valley, Calif., assignor to Airco, Inc., Montvale, N.J.

Filed Oct. 23, 1978, Ser. No. 953,994
Int. Cl.[3] F17C *7/02*
U.S. Cl. 62—52 **9 Claims**



1. A compact, self-contained ambient air vaporizer in combi-

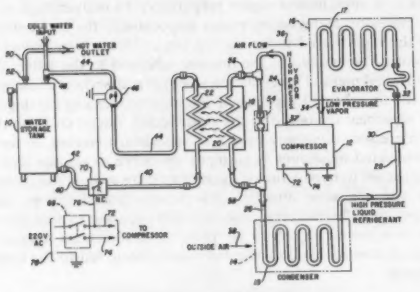
nation with an internal combustion engine having a radiator and an exhaust system, and pumping means operated by said internal combustion engine, said vaporizer comprising a heat exchanger having an ambient air inlet chamber and an outlet chamber, means to pass ambient air in a path from said inlet chamber to said outlet chamber, tubing means within said heat exchanger and located in the path of said ambient air, said tubing means adapted to receive liquid cryogenic substance from said pumping means, said ambient air providing heat to said cryogenic substance to warm said substance for conversion to a gas, and heating means comprising said internal combustion engine radiator in the inlet chamber of said heat exchanger, said heating means adapted to transfer heat derived from said internal combustion engine to warm the ambient air entering said inlet chamber.

4,226,606

WASTE HEAT RECOVERY SYSTEM

Ronald J. Yaeger, and Gerald W. Keller, both of Dallas, Tex., assignors to Air & Refrigeration Corp., Irving, Tex.

Filed Oct. 6, 1978, Ser. No. 949,084
Int. Cl.[2] F25B *27/02, 13/00*
U.S. Cl. 62—238 **7 Claims**



1. In a heat recovery system for recovering waste heat from refrigeration means to heat water supplied to a hot water reservoir wherein said refrigeration means includes a compressor having a discharge outlet for circulating a compressible refrigerant, and said heat recovery system comprises heat exchanger means having a refrigerant passage and a water passage mutually coupled in heat exchange relation, said refrigerant passage being connected in fluid communication with the discharge outlet of said compressor, and a conduit connecting said heat exchanger water passage in fluid communication with said reservoir to permit water to be circulated from said reservoir through said heat exchanger and return; the improvement comprising:

(a) a by-pass conduit connected in parallel fluid circuit relation with said refrigerant passage and having its inlet in fluid communication with the discharge outlet of said compressor, thereby enabling refrigerant exiting the discharge outlet of the compressor to flow through both the heat exchanger refrigerant passage and the by-pass conduit; and

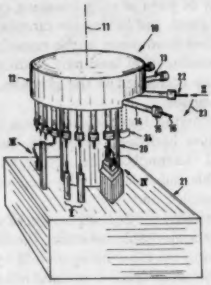
(b) a fluid flow restrictor disposed within said by-pass conduit, said restrictor effective to impede, but not prevent, refrigerant flow through said by-pass conduit.

4,226,607

METHOD FOR THE MANUFACTURE OF AMPULES FROM GLASS TUBES

Iwan Domken, Thimester-Clermont, Belgium, assignor to Firma Karl Lutz, Wertheim, Fed. Rep. of Germany

Filed Nov. 14, 1978, Ser. No. 960,611
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2757890
Int. Cl.[2] C03B *23/12*
U.S. Cl. 65—105 **2 Claims**



1. A method for the manufacture of ampules from glass tubes, comprising the steps of:

receiving an ampule blank with longitudinal axis horizontally from a blank production machine intermittently and successively,

clamping said ampule blank and holding said ampule elastically in vicinity of a closed end thereof;

rotating said ampule blank to a vertical position of said axis, said ampule blank having a downward-pointing head located at the end of an open tip opposite to said closed end of said ampule;

severing said downward-pointing head from said ampule blank while in vertical position of said axis;

removing impurities from the interior of said ampule blank after said severing step by blowing out the internal space of said ampule while in vertical position of said axis; and

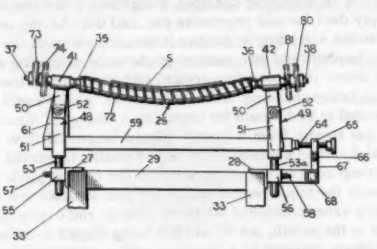
fusing the severed tip of said ampule while in vertical position of said axis.

4,226,608

METHOD AND APPARATUS FOR CURVING GLASS SHEETS

Harold E. McKelvey, Plymouth, Mich., assignor to Shatterproof Glass Corporation, Detroit, Mich.

Filed May 14, 1979, Ser. No. 38,515
Int. Cl.[2] C03B *23/02*
U.S. Cl. 65—106 **21 Claims**



1. Apparatus for curving glass sheets brought to a softening temperature, comprising a series of horizontally spaced flexible shaping rolls forming a curved concave bed for receiving the

softened glass sheets, end sections for supporting the rolls at their opposite ends, means for driving the rolls in rotation to move the glass sheets forwardly thereover, and means for moving said end sections inwardly and angularly downward toward one another to apply end pressure to the opposite end of the said rolls to cause said rolls to assume a predetermined concave curvature.

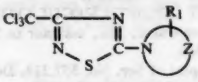
20. A method of bending heat softened sheets of glass to a predetermined curvature, which comprises conveying the softened glass sheets horizontally in a longitudinal direction over a shaping bed composed of a series of flexible shaping rolls of progressively increasing degrees of concave curvature in the direction of movement of the glass sheets and upon which said glass sheets sag under their own weight to gradually assume the final curved shape, and independently varying the relative degrees of concave curvature of succeeding shaping rolls in said bed by the application of pressure to the opposite ends of the said rolls to alter the concave profile of the shaping bed and thus the final curved shape of the glass sheets.

4,226,609
SELECTED 3-TRICHLOROMETHYL-5-CYCLIC AMINE-1,2,4-THIADIAZOLE COMPOUNDS AND THEIR USE AS AMMONIUM NITRIFICATION INHIBITORS

Lawrence E. Katz, Orange; Walter A. Gay, Cheshire, and Hansjuergen A. Schroeder, Hamden, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Mar. 1, 1979, Ser. No. 16,589
Int. Cl.³ C07D *417/04*; C05C *11/00*
U.S. Cl. 71—64 F **36 Claims**

1. A 3-trichloromethyl-5-cyclic amine-1,2,4-thiadiazole compound of the formula:



wherein

is either a 3, 4, 5, 6 or 7 membered saturated heterocyclic ring containing 1 to 3 hetero ring atoms;
wherein Z comprises 2–6 carbon atoms and 0–2 hetero atoms, said hetero atoms being either nitrogen, oxygen or sulfur; and wherein the ring substituents R_1 are selected from the group consisting of hydrogen, hydroxy, nitro, cyano, halo, alkyl, haloalkyl, amino, alkylamino, dialkylamine and alkoxy groups.

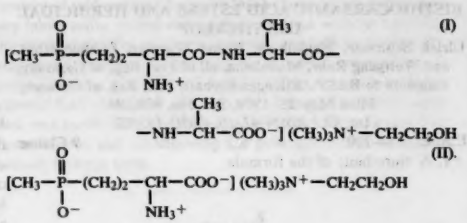
13. A fertilizer composition comprising one or more nitrogen-containing fertilizers in admixture with an effective nitrification-inhibiting amount of one or more nitrification-inhibiting compounds of claim 1.

4,226,610
HERBICIDAL COMPOUNDS, PREPARATION THEREOF AND HERBICIDES CONTAINING THE SAME

Tetsuo Takematsu; Makoto Konnai, both of Utsunomiya; Akira Suzuki, Tokyo; Kunitaka Tachibana, Yokohama; Takashi Tsuruoka, Kawasaki; Shigeharu Inouye, and Tetsuro Watanabe, both of Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Apr. 6, 1979, Ser. No. 27,900
Claims priority, application Japan, Apr. 15, 1978, 53-44662; Jul. 4, 1978, 53-80486
Int. Cl.² A01N *57/00*; C07F *9/02*; C07C *103/52*
U.S. Cl. 71—86 **22 Claims**

1. A compound of formula (I) or (II):



(I)

(II).

2. A herbicidal composition for controlling weeds, shrubs and aquatic plants which comprises an effective amount of a compound as claimed in claim 1 and an agriculturally acceptable carrier.

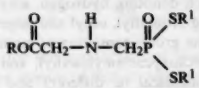
3. A method of destroying weeds, shrubs and aquatic plants which comprises applying thereto an effective amount of a compound as claimed in claim 1.

4,226,611
N-PHOSPHONOMETHYLGLYCINE THIOESTER HERBICIDES

John E. Franz, Crestwood, and Robert J. Kaufman, University City, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 3, 1978, Ser. No. 957,394
Int. Cl.³ A01N *57/12, 57/14*; C07F *9/40*
U.S. Cl. 71—87 **30 Claims**

1. A compound of the formula



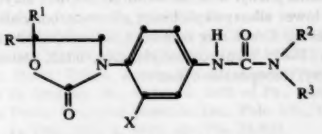
wherein R is a member of the class consisting of alkyl of from 1 to 6 carbon atoms, chloroalkyl of from 1 to 4 carbon atoms and alkoxyalkyl and each R^1 is a member of the class consisting of alkyl of from 1 to 6 carbon atoms, alkenyl of from 2 to 4 carbon atoms, phenylalkyl wherein the alkyl group contains of from 1 to 4 carbon atoms and mixtures thereof.

4,226,612
CERTAIN HERBICIDAL (2-OXO-3-OXAZOLIDINYL)PHENYLUREAS

Kurt H. Pilgram, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 2, 1979, Ser. No. 54,395
Int. Cl.³ C07D *263/24, 263/38*; A01N *43/76*
U.S. Cl. 71—88 **3 Claims**

1. A compound of the formula:



wherein R and R^1 each is hydrogen or lower alkyl, R^2 is lower alkyl and R^3 is lower alkyl, lower alkyloxy, or 2-propenyloxy, and X is middle halogen.

3. A method for killing unwanted plants at a locus which comprises applying to the locus to be protected a herbicidal amount of a compound of claim 1 or a composition containing it.

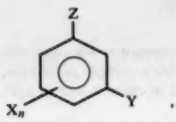
4,226,613

BISTHIOCARBAMIC ACID ESTERS AND HERBICIDAL USE THEREOF

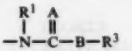
Ulrich Schirmer, Heidelberg; Bruno Wuerzer, Limburgerhof, and Wolfgang Rohr, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 25, 1978, Ser. No. 909,196
Int. Cl.[3] A01N *47/10*; C07C *155/02*
U.S. Cl. 71—100 9 Claims

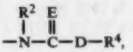
1. A diurethane of the formula



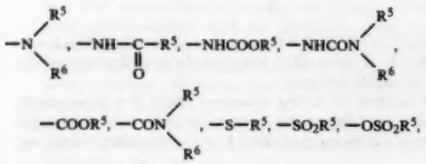
where Z denotes the radical



and Y denotes the radical



Z always being different from Y and R^1 and R^2 being identical or different and each denoting hydrogen, alkyl selected from the group consisting of methyl, ethyl and isopropyl, alkoxyalkyl selected from the group consisting of methoxymethyl and 2-methoxyethyl, methoxycarbonylmethyl, and chloromethyl, R^3 and R^4 being identical or different and each denoting methyl, ethyl, n-propyl, isopropyl, n-butyl, sec-butyl, isobutyl, tert-butyl, 2-ethylhexyl or n-decyl, 2-chloroethyl, 2-methoxyethyl, methoxycarbonyl methyl or lower alkyl substituted by phenyl or substituted aryl, the aryl substituent selected from the group consisting of 4-chlorophenyl and 2,4-dichlorophenyl, unsubstituted or halogen-substituted alkenyl selected from the group consisting of allyl, 2-chloropropen-(1)-yl-(3), butene-(1)-yl-(3), 2,3-dichloroallyl and 3,3-dichloro-2-methylallyl, unsubstituted or halogen- or alkoxy-substituted lower alkynyl, unsubstituted or alkyl-substituted cycloalkyl selected from the group consisting of cyclopentyl, 1-methylcyclopentyl, cyclohexyl, 2-methylcyclohexyl, 3-methylcyclohexyl, 4-methylcyclohexyl, 2,6-dimethylcyclohexyl, cycloheptyl, 4-tert-butylcyclohexyl, cyclooctyl, cyclododecyl and 3,5-dimethylcyclohexyl, 3,3,5-trimethylcyclohexyl, norbornyl, adamantyl, tricyclo-(4,3,$1^{2,5}$,$0^{1,6}$)-decyl, phenyl substituted with a fused ring system selected from the group consisting of naphthyl and indyl, phenyl or mono-or polysubstituted phenyl with the substituents lower alkyl, lower haloalkyl, lower alkoxyalkyl, lower alkoxycarbonylalkyl, cycloalkyl having 5 or 6 ring members, halogen, alkoxy, lower haloalkoxy, lower alkoxycarbonylalkoxy, nitro, amino, phenyl, phenoxy, thiocyanato, cyano



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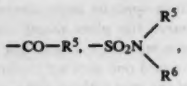


R^5 and R^6 being identical or different and each denoting hydrogen, or phenyl and A, B, D and E being identical or different and each denoting oxygen or sulfur (with the proviso that one of these always denotes sulfur), X denotes hydrogen, lower alkyl, lower haloalkyl, lower alkoxy, halogen, nitro or amino, and n denotes one of the integers 1, 2, 3 and 4.

4,226,614

CYANOMETHYL ESTER OF 4-(P-TRIFLUOROMETHYLPHENOXY)-α-PHENOXY-PROPIONIC ACID AND A METHOD OF CONTROLLING WEEDS THEREWITH

Beat Böhner, Binningen, and Otto Rohr, Therwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 1, 1979, Ser. No. 8,624
Claims priority, application Switzerland, Feb. 3, 1978, 1214/78
Int. Cl.[2] A01N *9/20*; C07I *121/75*
U.S. Cl. 71—105 2 Claims

1. A method of selectively controlling *Avena fatua* in crops of dicotyledonous cultivated plants, which comprises post-emergence treatment of the *Avena fatua*-infested crops of cultivated plants with a herbicidally effective amount of the cyanomethyl ester of 4-(p-trifluoromethyl-phenoxy)-α-phenoxypropionic acid.

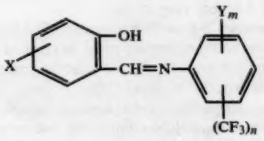
4,226,615

PLANT GROWTH REGULATORS

Gerard H. Alt, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 537,224, Dec. 30, 1974, abandoned. This application Sep. 5, 1978, Ser. No. 939,308
Int. Cl.[2] A01N *9/20*
U.S. Cl. 71—121 22 Claims

9. A plant growth regulating composition consisting essentially of an adjuvant and a non-lethal amount of a compound having the formula



wherein

X and Y independently represent chlorine, bromine or iodine,

m is 0–3; and

n is 1–3.

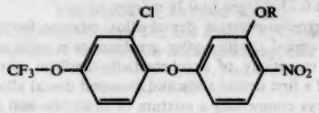
4,226,616

DIPHENYL ETHER AND HERBICIDE CONTAINING THE SAME

Kunikazu Hiraga, Izumi; Shoichi Shibayama, Takatsuki; Isao Yanai, Osaka, and Tatsuo Harada, Kawachinagano, all of Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1978, Ser. No. 872,338
Claims priority, application Japan, Jan. 31, 1977, 52-9463
Int. Cl.[2] C07C *41/00, 43/22*; A01N *9/24*
U.S. Cl. 71—124 14 Claims

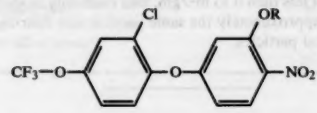
1. A diphenyl ether represented by the general formula (I),



(I)

wherein R is a lower alkyl group having 1 to 4 carbon atoms, a lower alkoxyethyl group, the alkoxy substituent of which having 1 to 4 carbon atoms, or a lower alkoxyethoxyethyl group, the alkoxy substituent of which having 1 to 4 carbon atoms.

13. A herbicide comprising as active ingredient a diphenyl ether represented by the general formula (I),



(I)

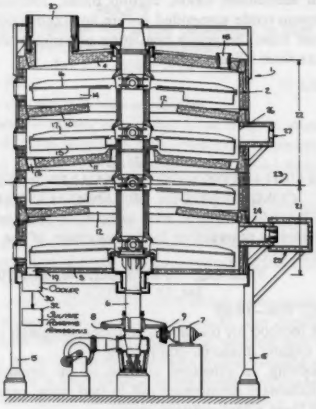
wherein R is a lower alkyl group having 1 to 4 carbon atoms, a lower alkoxyethyl group, the alkoxy substituent of which having 1 to 4 carbon atoms, or a lower alkoxyethoxyethyl group, the alkoxy substituent of which having 1 to 4 carbon atoms, and a diluent.

4,226,617

METHOD FOR TREATING A MINERAL SULFIDE

Jacques J. M. J. A. G. Dupont, Brussels, Belgium, assignor to Nichols Engineering Societe Anonyme, Brussels, Belgium

Filed Sep. 23, 1975, Ser. No. 615,910
Claims priority, application Belgium, Sep. 26, 1974, 148915
Int. Cl.[3] C22B *1/02*
U.S. Cl. 75—7 **15 Claims**



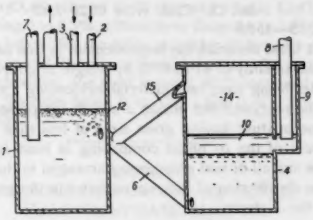
1. A process for treating a sulfur containing material having at least one principal sulfide and at least one auxiliary sulfide including arsenic sulfide more volatile than the principal sulfide, said process comprising the steps of passing said material downwardly through a first furnace zone having an oxidizing atmosphere in the gas phase, said first zone being maintained at a temperature less than about 425° C. to prevent substantial oxidation of the principal sulfide but sufficient to oxidize volatilized auxiliary sulfide and labile sulfur, passing said material from said first furnace zone downwardly into a second furnace zone having a non-oxidizing atmosphere in the gas phase, heating said material in said second furnace zone to a temperature between about 400° C. and 1000° C., lowering the sulfur content of said material by volatilizing the auxiliary sulfide and any labile sulfur in said second furnace zone without volatilizing or substantially oxidizing the principal sulfide, passing the volatilized auxiliary sulfide and labile sulfur formed in said second furnace zone through said first furnace zone in countercurrent flow to that of said material in order to oxidize same and, as a result, heat said material as it passes through said first furnace zone and withdrawing the principal sulfide from said second furnace zone.

4,226,618

CARBOTHERMIC PRODUCTION OF ALUMINIUM

Ernest W. Dewing, and Frederick W. Southam, both of Kingston, Canada, assignors to Alcan Research and Development Limited, Montreal, Canada

Filed Aug. 7, 1979, Ser. No. 64,582
Claims priority, application United Kingdom, Aug. 21, 1978, 34069/78
Int. Cl.[2] C22B *21/02*
U.S. Cl. 75—68 A **9 Claims**



1. In a process for the production of aluminium metal in which a circulating stream of molten alumina slag containing aluminium carbide is passed through one or more zones of relatively low temperature at which carbon feed is introduced for reaction with alumina to form additional aluminium carbide with evolution of carbon monoxide gas and through one or more zones maintained at a higher temperature such that aluminium carbide reacts with alumina for production of aluminium metal with evolution of carbon monoxide gas having a significant content of gaseous aluminium suboxide and aluminium vapour

the improvement which comprises contacting the carbon monoxide gas evolved in said high temperature zone or zones with molten alumina slag, containing dissolved aluminium carbide, at a lower temperature than said gas under conditions to effect substantial cooling of said gas and thus to effect at least partial exothermix back-reaction of aluminium suboxide and said aluminium vapour with carbon monoxide.

4,226,619

AMORPHOUS ALLOY WITH HIGH MAGNETIC INDUCTION AT ROOM TEMPERATURE

Shinichiro Hatta, Tokyo, Japan; Takeshi Egami, Wayne, and Charles D. Graham, Jr., Ardmore, both of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed May 4, 1979, Ser. No. 35,837
Int. Cl.[3] C22C *38/12, 38/00*
U.S. Cl. 75—123 K **13 Claims**

1. An alloy with a room temperature flux density in excess of 16.5 kGauss comprising 73 to 90 atomic % iron, 0 to 10 atomic % of an element selected from the group consisting of cobalt, nickel or a combination thereof, the total iron, cobalt and nickel content ranging from 83 to 90 atomic %, and 8 to 17 atomic % of boron and carbon.

4,226,620

MAGNETIC ALLOYS

Frederick Rothwarf, Toms River; Robert L. Bergner, Randolph; Herbert A. Leupold, Eatontown, and Arthur Tauber, Elberon, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 27, 1979, Ser. No. 33,939
Int. Cl.[3] C22C *28/00*
U.S. Cl. 75—134 C 3 Claims

1. A high coercivity, high energy product permanent magnet alloy corresponding to the formula $Sm_2Cu_{1.6}Zr_{0.16}Fe_{3.3}Co_{10}Mn_2$ and having a saturation magnetization of 9.69 kG, an antisotropy field of 115 kOe, and a temperature coefficient of magnetization of −0.02%/C.

4,226,621

BRASS MATERIAL AND A PROCESS FOR THE PREPARATION THEREOF

Peter Ruchel, Lauf, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Sep. 11, 1978, Ser. No. 941,131
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1977, 2742008
Int. Cl.[3] C22C *9/04*; C22F *1/08*
U.S. Cl. 75—157.5 5 Claims

1. In a brass material, the improvement in that said material comprises an alloy of 61 to 65% by weight of copper with the remainder being zinc; said material evidencing a structure in which the recrystallized phases α and β_1 are present as a discrete fine mixture having grain sizes of less than 5 μm, the component of the β_1 phase comprising at least 10%, of the structure and all of said phase being arranged in the form of a superfine distribution of discrete particles in the grain boundaries of the α phase.

4,226,622

CORROSION-RESISTANT DENTAL ALLOY

Joseph Aliotta, Newton, Mass., and Louis F. Alcuri, Jr., Matawan, N.J., assignors to Engelhard Minerals & Chemicals Corporation, Iselin, N.J.

Continuation-in-part of Ser. No. 760,183, Jan. 17, 1977, abandoned. This application Aug. 24, 1978, Ser. No. 936,560
Int. Cl.[3] B22F *1/00*
U.S. Cl. 75—251 13 Claims

1. A corrosion-resistant dental alloy mixture for use as a filling for dental cavities after amalgamation with mercury consisting essentially of a substantially uniform mixture of particles of a first dental alloy and a second dental alloy, both of said dental alloys comprising a mixture of silver, tin and copper, said first alloy comprising spherical particles having a mean particle size of from about 20 to 26.5 microns, and further having a particle size distribution such that substantially all of said particles fall within a particle size range of from about 1 to 75 microns, said particles having a surface area of about 0.21 m^2/gm, and said second alloy comprising particles having a mean particle size of between about 20 and 26.5 microns, and further having a particle size distribution such that substantially all said particles fall within a particle size range of from about 1 to 75 microns, said particles having a surface area of from about 0.23 m^2/gm to 0.26 m^2/gm.

7. A corrosion-resistant dental alloy mixture for use as a filling for dental cavities after amalgamation with mercury consisting essentially of a substantially uniform mixture of particles of a first dental alloy and a second dental alloy, both of said alloys comprising a mixture of silver, tin and copper, said first dental alloy comprising spherical particles having a mean particle size of between about 20 and 26.5 microns, and further having a particle size distribution such that substantially all of said particles fall within the particle size range of from about 1 to 75 microns, said spherical particles having a surface area of about 0.21 m^2/gm, and said second alloy comprising randomly shaped particles having a surface area at least about 20 percent greater than the surface area of said spherical particles but less than 0.33 m^2/gm, said randomly shaped particle having approximately the same particle size distribution as said spherical particles.

4,226,623

METHOD FOR POLISHING A SINGLE CRYSTAL OR GADOLINIUM GALLIUM GARNET

Isamu Koshiyama, Nagoya, and Yoshisuke Naitou, Aichi, both of Japan, assignors to Fujimi Kenmazai Kogyo Co., Ltd., Aichi, Japan

Filed Dec. 5, 1979, Ser. No. 100,497
Claims priority, application Japan, Feb. 19, 1979, 54-18590
Int. Cl.[3] B24B *1/00*; C09G *1/02*
U.S. Cl. 106—3 11 Claims

1. A mechanochemical method of polishing a gadolinium gallium garnet single crystal characterized by polishing said gadolinium gallium garnet single crystal with a composition comprising a polishing agent selected from the group consisting of aluminium oxide, cerium oxide, zirconium oxide or chromium oxide suspended within an alkaline silicate solution selected from the group consisting of sodium silicate solution or potassium silicate solution.

4,226,624

SOLUBILIZATION OF HEXAVALENT CHROMIUM COMPOUNDS IN ORGANIC MATERIALS

Jack Ohr, Miami Beach, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 28, 1978, Ser. No. 937,670
Int. Cl.[3] C09D *5/08*
U.S. Cl. 106—14.05 13 Claims

1. A method for dissolving an inorganic alkali metal salt in a liquid organic material comprising:

dissolving an effective amount of an organo substituted quaternary ammonium salt in said liquid organic material to form a first solution; and

mixing an effective amount of said inorganic alkali metal salt with said first solution to form a second solution including cations from said quaternary salt and anions from said inorganic alkali metal salt in said liquid organic material; wherein said alkali metal salt is selected from the group consisting of sodium chromate, sodium dichromate and potassium chromate.

8. A solution, comprising:

a liquid organic material containing, in solution, cations from an organo substituted quaternary ammonium salt, and anions from an inorganic alkali metal salt selected from the group consisting of sodium chromate, sodium dichromate and potassium chromate.

4,226,625
INSULATING TUNDISH VENEER COMPOSITION USEFUL IN CASTING STEEL

Guy A. Delcorio, Chicago, Ill., and Joseph V. Grothaus, Leeds, Ala., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Jun. 4, 1979, Ser. No. 45,531
Int. Cl.[3] C04B 35/68
U.S. Cl. 106—38.22 7 Claims

1. A tundish composition useful in casting steel which has the range of components as a troweling mix as follows:

	Percent
Diatomaceous earth	5–50
Refractory silica-alumina filler	5–50
Clay	2–20
Wood glue	0.2–5
Silica-alumina fiber	5–25
Graphite	1–25
Colloidal silica binder	1–30
Water	15–50

4,226,626
BINDER COMPOSITION CONTAINING ALCOHOL

Richard H. Toeniskoetter, Worthington, and John J. Spiwak, Columbus, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 455,474, Mar. 27, 1974, abandoned, which is a continuation-in-part of Ser. No. 351,903, Apr. 17, 1973, Pat. No. 3,923,525, and Ser. No. 415,852, Nov. 14, 1973, Pat. No. 3,930,872. This application Dec. 27, 1977, Ser. No. 865,079
The portion of the term of this patent subsequent to May 16, 1995, has been disclaimed.
Int. Cl.[2] B28B 7/34
U.S. Cl. 106—38.35 47 Claims

1. Binder composition which comprises:

(A) aluminum phosphate containing from 0 up to about 40 mole % of boron based upon the moles of aluminum and containing a mole ratio of phosphorus to total moles of aluminum and boron of about 2:1 to about 4:1;

(B) nonpolymeric normally solid polyhydric alcohol soluble in aqueous solutions of the aluminum phosphate, and containing at least 2 adjacent carbon atoms each having directly attached thereto one alcoholic hydroxyl group; and keto tautomers thereof;

(C) oxygen-containing alkaline earth metal compound containing alkaline earth metal and an oxide, and capable of reacting with the aluminum phosphate; wherein said alkaline earth metal compound includes a free alkaline earth metal oxide or a free alkaline earth metal hydroxide and wherein said oxide or hydroxide has a surface area no greater than about 8.5 m^2/gram (measured by the BET procedure); and

(D) water;

wherein the amount of aluminum phosphate is from about 50 to about 95% by weight based upon the total weight of aluminum phosphate and alkaline earth metal compound; the amount of alkaline earth metal compound is from about 50 to about 5% by weight based upon the total weight of aluminum phosphate and alkaline earth metal compound, the amount of water is from about 15 to about 50% by weight based upon the total weight of aluminum phosphate and water; and the amount of said alcohol is from about 0.5 to about 25% by weight based upon the total weight of aluminum phosphate and alcohol.

4,226,627
OPTICAL GLASS

Satoshi Inoue, Sagamihara, and Fujio Komorita, Hachioji, both of Japan, assignors to Kabushiki Kaisha Ohara Kogaku Garasu Seizosho, Kanagawa, Japan

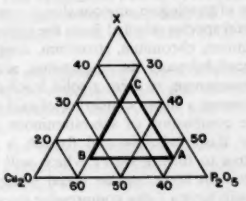
Filed Jun. 13, 1979, Ser. No. 48,196
Claims priority, application Japan, Jun. 21, 1978, 53-74289
Int. Cl.[3] C03C 3/08, 3/14
U.S. Cl. 106—47 Q 1 Claim

1. An optical glass having refractive index (nd) within a range of 1.68 to 1.82 and Abbe number (νd) greater than values on a line connecting a point where nd is 1.68 and νd is 56.0 and a point where nd is 1.82 and νd is 45.0 in an nd—νd rectangular coordinates representative of optical constants and substantially consisting of a composition in weight percent of 17.0 to 45.0% B_2O_3, 0.5 to 10.0% SiO_2, the total of said B_2O_3 and SiO_2 being 24.0 to 47.0%, 0.05 to 4.0% SnO_2, 20.0 to 50.0% $La_2O_3$1.0 to 35.0% Yb_2O_3, 0 to 35.0% Gd_2O_3, 0 to 15.0% Y_2O_3 the total of said La_2O_3, Yb_2O_3, Gd_2O_3 and Y_2O_3 being 43.0 to 68.0%, 0 to 3.0% Al_2O_3, 0 to 5.0% GeO_2, 0 to 10.0% ZrO_2, 0 to 8.0 Ta_2O_5, 0 to 3.0% Nb_2O_5, 0 to 5.0% MgO, 0 to 10.0% CaO, 0 to 10.0% SrO, 0 to 10.0% BaO, 0 to 8.0% ZnO, the total of said MgO, CaO, SrO, BaO and ZnO being 0 to 10.0%, one or more ingredients selected from the group consisting of Li_2O, Na_2O and K_2O, the total of said Li_2O, Na_2O and K_2O being 0 to 0.5%, a fluoride or fluorides in substitution, in part or in whole, for the oxide or oxides of the same element or elements as said fluoride or fluorides among the ingredients of said composition, the total amount of F contained in said fluoride or fluorides being 0 to 8.0%, and 0 to 0.2% As_2O_3 and/or Sb_2O_3.

4,226,628
CUPROUS COPPER AND/OR SILVER HALOPHOSPHATE GLASSES

Roger F. Bartholomew, Painted Post; William G. Dorfeld, Lindley; James A. Murphy, Painted Post; Joseph E. Pierson, Painted Post; Stanley D. Stookey, Painted Post, and Paul A. Tick, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,901
Int. Cl.[2] C03C 3/16
U.S. Cl. 106—47 R 7 Claims



1. Cuprous copper and/or silver halophosphate glasses having softening points less than about 400° C., coefficients of thermal expansion (25°–300° C.) in excess of about 180 $\times 10^{-7}$/° C., and electrical resistivities when measured at room temperature of less than about 10^8 ohm cm, said glasses consisting essentially of the stated proportions, expressed in terms of weight percent on the oxide basis as calculated from the batch, selected from the groups of:

(a) compositions defined by area ABCD of FIG. 1;

(b) compositions defined by area ABCD of FIG. 2;

(c) compositions defined by area ABCDE of FIG. 3;

(d) compositions containing at least 1% chloride and defined by area ABCD of FIG. 5;

(e) compositions containing at least 1% bromide and defined by area ABCD of FIG. 6;

(f) compositions containing at least 1% iodide and defined by area ABCDE of FIG. 7;

(g) compositions defined by area ABCDEF of FIG. 8;
(h) compositions defined by area ABCDEF of FIG. 9;
(i) compositions defined by area ABCDEF of FIG. 10;
(j) compositions defined by area ABCDEF of FIG. 11.

4,226,629

ELECTROFUSION METHOD OF PRODUCING BORON ALUMINUM OXIDE REFRACTORY

Heizi Tabuchi, and Toshiaki Itoh, both of Matsusaka, Japan, assignors to Central Glass Company, Limited, Ube, Japan

Continuation-in-part of Ser. No. 886,109, Mar. 13, 1978, abandoned. This application May 8, 1979, Ser. No. 37,010
Int. Cl.[2] C04B *35/10*
U.S. Cl. 106—65 **12 Claims**

1. An electrofusion method of producing a refractory material comprising a boron aluminum oxide phase expressed by the formula $9Al_2O_3.2B_2O_3$, the method comprising the steps of:

preparing a powder mixture of aluminum oxide, diboron trioxide and at least one alkali metal compound selected from the group consisting of oxides and carbonates of lithium the amount of said lithium compound calculated in terms of Li_2O being at least 0.4 Wt% of the sum of Al_2O_3 and B_2O_3 in said mixture; and

melting said mixture in an electric furnace by making a current flow through said mixture;

the composition of said mixture being controlled such that the product of the melting step contains 78–94 Wt% of Al_2O_3, 6–15 Wt% of B_2O_3 and up to 2 Wt% of R_2O such that the sum of Al_2O_3, B_2O_3 and R_2O is not smaller than 95 Wt%, where R_2O represents at least one alkali metal oxide selected from the group consisting of Li_2O, Na_2O and K_2O, the amount of Li_2O in said product being not larger than 0.6 Wt%, the amount of Na_2O in said product being not larger than 1.6 Wt%.

4,226,630

LEACH-RESISTANT SOLID BODIES FROM FLY ASH AND HEAVY METAL SLUDGE

Robert W. Styron, Marietta, Ga., assignor to Amax Resource Recovery Systems, Inc., Atlanta, Ga.

Filed Apr. 3, 1979, Ser. No. 26,492
Int. Cl.[3] C04B *7/28*
U.S. Cl. 106—85 **16 Claims**

1. A process of treating an aqueous sludge containing at least one heavy metal species selected from the group consisting of tungsten, cadmium, chromium, strontium, copper, iron, lead, nickel, zinc, molybdenum, tin, magnesium, aluminum, phosphorus, and manganese, to form a solid leach-resistant body, comprising forming a slurry consisting of said sludge, fly ash formed in the combustion of sub-bituminous coal from the Powder River Basin wherein said fly ash is present in an amount effective to form a slurry which will harden into a solid, leach-resistant body, and an initial water content such that the body will have a 7-day compressive strength of at least about 250 psi, and allowing the slurry to harden.

4,226,631

METHOD OF SOLIDIFYING NOXIOUS WASTES

Hirosuke Kubota, Kawanishi, Japan, assignor to Kabushiki Kaisha Takenaka Komuten, Osaka and Kabushiki Kaisha Takenaka Doboku, Tokyo, both of, Japan

Filed Oct. 23, 1978, Ser. No. 953,383
Claims priority, application Japan, Oct. 26, 1977, 52/129295
Int. Cl.[3] C04B *7/355*
U.S. Cl. 106—95 **4 Claims**

1. A method of solidifying noxious wastes containing toxic contaminants, characterized by adding and admixing:

a hydraulic cement or cement-type solidifying agent containing hydraulic cement as the main effective ingredient, and a lipid, simultaneously or separately into the noxious wastes, to cause solidification and at the same time fixation of said toxic contaminants.

4,226,632

PROCESS FOR PRODUCING HIGH-PURITY ALUMINA AND HYDRAULIC CEMENT

Laszlo Kapolyi, Budapest; Geza Szentgyörgyi, Tatabánya; György Vamos, Budapest, all of Hungary; Jerzy Grzymek, Warsaw, Poland; Anna D. Grzymek, Cracow, Poland; Stanislaw Bethke, and Bronislaw Werynski, both of Opole, Poland, assignors to Tatabányai Szénbányák, Tatabánya, Hungary

Continuation of Ser. No. 731,370, Oct. 12, 1976, abandoned. This application Sep. 18, 1978, Ser. No. 942,962
Int. Cl.[2] C04B *7/36*
U.S. Cl. 106—100 **10 Claims**

1. In a process for recovering aluminum from a low grade aluminum and silicon containing starting material by sintering the starting material with limestone to produce a reaction product containing dicalcium silicate, cooling the reaction product whereby phase conversion of the dicalcium silicate causes the reaction product to disintegrate and subjecting the disintegrated product to alkaline extraction, wherein the improvement comprises the starting material and limestone are intimately mixed; the mixture of starting material and limestone is fluidized and preheated in the fluidized state to a temperature of 700° to 900° C. by heat exchange; then the preheated mixture is held at sintering temperature for 5 to 10 minutes in said sintering step.

4,226,633

RAW COMPOSITION FOR CARBON ARTICLES

Kiro Asano; Fumio Tamura; Yoshio Kawai, all of Tokyo, and Kiyoshi Yamaki, Fuchu, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 665,049, Mar. 8, 1976, abandoned, which is a continuation of Ser. No. 459,845, Apr. 10, 1974, abandoned. This application Jul. 3, 1978, Ser. No. 923,647
Claims priority, application Japan, Apr. 14, 1973, 48-42590
Int. Cl.[3] C08L *95/00;* **C08J** *9/24*
U.S. Cl. 106—269 **17 Claims**

1. A method for preparing a homogeneous and low porosity carbon article of great mechanical strength comprising:

(I) shaping into a desired form a composition comprising:

a sinterable mother material which is in fibrous, powder or particulate form, and which (i) is a polycyclic aromatic compound obtained from tar or pitch, (ii) has a H/C atomic ratio of from 0.3 to 0.75, (iii) a fixed carbon value of 55 to 96%, (iv) does not flow out of a 1 mm diameter nozzle under an applied load of 10 kg/cm^2 at 300° C., (v) benzene insolubles of more than 90%, and (vi) is capable of being sintered together without deformation while baking; and

an additive, in an amount sufficient to improve the workability and carbonization characteristics of said mother material, selected from the group consisting of: (i) a hydrocarbon, (ii) a fatty acid, an ester or metal salt thereof, (iii) an organic compound having a OH functional group in the molecule, and (iv) mixtures thereof, the additive having a maximum fixed carbon value of 20%, a boiling or decomposition point of at least 150° C., and becoming fluid at a temperature of at least 1,000° C., wherein said hydrocarbon (i) is selected from the group consisting of a liquid paraffin, a lubricating oil, a light oil, a coal tar, naphthalene, an alkyl naphthalene, an anthracene oil and a bottom oil by-product in the manufacture of olefins; said fatty acid (ii) is selected from the group consisting of lauric acid, myristic acid, palmitic acid, stearic acid and oleic acid; and said organic compound (iii) is selected from the group consisting of ethylene glycol, propylene glycol, glycerine, cyclohexanol, lauryl alcohol, decyl alcohol, cetyl alcohol, polyethylene glycol, polypropylene glycol and polyvinyl alcohol; and

(II) baking the shaped composition at a temperature of at least 1,000° C. to sinter and fuse together said mother material and to carbonize or graphitize the composition in

a nonoxidizing atmosphere, thereby providing a homogeneous and low porosity carbon article of great mechanical strength.

4,226,634

PROCESS FOR PREPARING PIGMENT COMPOSITIONS

Peter Dimroth, Mannheim; Helmut Knittel, Ludwigsburg; August Seitz, Besigheim, and Dietrich Wolff, Stuttgart, all of Fed. Rep. of Germany, assignors to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

Filed Jan. 23, 1979, Ser. No. 5,765

Claims priority, application Austria, Jan. 24, 1978, 517/78

Int. Cl.[3] B02C *17/20;* C09B *67/04, 67/22;* C09C *1/36*

U.S. Cl. 106—288 Q 8 Claims

1. A process for producing pigment compositions which comprises:

(a) subjecting a suspension of an inorganic pigment component and of an organic pigment component in a liquid medium to intense shearing stresses, said inorganic pigment component being nickel titanium yellow, chromium titanium yellow, barium chromium titanate, barium nickel titanate and

(b) recovering a mixture of said components from said medium.

4,226,635

EXTENDED $BACO_3$ FOR BRICK SCUM PREVENTION

Robert H. Kindrick, Bartlesville, Okla., and Benjamin C. Harrison, Homewood, Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed Jun. 4, 1979, Ser. No. 45,149

Int. Cl.[2] C04B *31/44;* C09C *1/02*

U.S. Cl. 106—306 7 Claims

1. A barium carbonate product useful as a chemical scavenger which consists essentially of an inert core and an effective amount of a thin crystalline layer of above about 10% by weight of barium carbonate precipitated in situ upon said core.

4,226,636

PRODUCTION OF CALCIUM SILICATE HAVING HIGH SPECIFIC BULK VOLUME AND CALCIUM SILICATE-GYPSUM COMPOSITE

Yukio Mizutani, Tokuyama; Yoshiaki Watanabe, Hikari, and Genji Taga, Shinnanyo, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

Filed Dec. 29, 1978, Ser. No. 974,523

Claims priority, application Japan, Dec. 30, 1977, 52-160031; Aug. 30, 1978, 53-104988; Dec. 18, 1978, 53-154889

Int. Cl.[2] C09C *1/02*

U.S. Cl. 106—306 13 Claims

1. A process for producing calcium silicate of the rational formula $2CaO,3SiO_2.nSiO_2.mH_2O$ wherein m is a number of more than 0 and n is a number of 0.1 to 5, said calcium silicate having a petal-like structure, a specific bulk volume of at least 4 cc/g and an amount of oil absorption of at least 2.0 cc/g, which process comprises contacting a water-soluble silicate compound with a calcium compound in an aqueous medium, and heating the resultant mixture at a temperature of 150° to 250° C., the amount of the aqueous medium being 5 to 100 times the weight of the calcium silicate obtained.

4,226,637

DISPERSING OF PIGMENTS

Heinrich Linden, Düsseldorf; Jochen Heidrich, Düsseldorf-Benrath; Bernd Wegemund, Haan, and Hans Bornmann, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

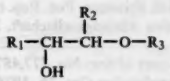
Filed Nov. 20, 1978, Ser. No. 962,371

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1977, 2754576

Int. Cl.[3] C09C *1/24, 1/36, 3/08;* C09D *3/00*

U.S. Cl. 106—308 Q 11 Claims

10. Coated filler and pigment particles for paints and lacquers consisting essentially of particles of pigment and filler coated with 0.05% to 5% by weight of a dispersant selected from the group consisting of a β-hydroxyalkyl ether of the formula



where R_1 and R_2 are members selected from the group consisting of hydrogen and alkyl of 1 to 21 carbons, with the proviso that at least one of R_1 and R_2 is alkyl and the sum of the carbons in R_1 and R_2 is from 6 to 22; and R_3 is a member selected from the group consisting of alkyl having from 1 to 8 carbon atoms, hydroxyalkyl having from 2 to 8 carbon atoms, dihydroxyalkyl having from 3 to 8 carbon atoms, alkoxyalkyl having from 3 to 8 carbon atoms, hydroxyalkoxyalkyl having from 4 to 8 carbon atoms, and hydroxyalkoxyalkoxyalkyl having from 6 to 8 carbon atoms, and the alkylene oxide adducts selected from the group consisting of ethylene oxide and propylene oxide of said β-hydroxyalkyl ether.

4,226,638

METHOD OF MANUFACTURING XYLOSE SOLUTION FROM XYLAN-CONTAINING RAW MATERIAL

Hansjorg Pfeiffer, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Continuation-in-part of Ser. No. 811,192, Jun. 29, 1977, abandoned. This application Feb. 5, 1979, Ser. No. 9,494

Claims priority, application Switzerland, Jul. 1, 1976, 8428/76

Int. Cl.[3] C13K *1/02;* C13D *1/00*

U.S. Cl. 127—37 9 Claims

1. A method of manufacturing a xylose solution from a xylan containing plant raw material in particular animal plants which is very water absorbent in the dry state, said method comprising the steps of

spraying the raw material with an acid to an extent sufficient to permit hydrolysis of the xylan to xylose without completely saturating the raw material;

heating the raw material to a temperature sufficient to effect hydrolysis of the xylan to a xylose solution; and

thereafter washing the acid-treated and heated raw material in counterflow with water to extract the xylose solution therefrom.

4,226,639

SILICA GUARD BED FOR ADSORBENT USED IN AN AQUEOUS SYSTEM

Edward Michalko, Hemet, Calif., and Armand J. deRosset, Clarendon Hills, Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed May 25, 1979, Ser. No. 42,479

Int. Cl.[3] C13D *3/14*

U.S. Cl. 127—46 A 6 Claims

1. In a process for the separation of a component from a feed mixture comprising an aqueous solution comprising a mixture of saccharides components by contacting an aqueous solution comprising a mixture of saccharide components with an adsorbent comprising a crystalline aluminosilicate exhibiting an

adsorptive selectively towards said component thereby selectively adsorbing said component from said mixture, maintain said absorbent at a temperature of less than 65° C., and thereafter recovering said adsorbed component by elution with an aqueous desorbent, the silicon constituent of said crystalline aluminosilicate tending to dissolve in said solution resulting in the undesirable disintegration of said crystalline aluminosilicate, the improvement which comprises contacting said feed mixture or said desorbent with a bed of silica gel prior to contacting said feed or said desorbent with said adsorbent, thereby effecting a substantial reduction in the extent of dissolution of said silicon constituent and the extent of said disintegration of said crystalline aluminosilicate in said adsorbent.

4,226,640

METHOD FOR THE CHEMICAL DECONTAMINATION OF NUCLEAR REACTOR COMPONENTS

Horst-Otto Bertholdt, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 777,457, Mar. 14, 1977, abandoned. This application Oct. 26, 1978, Ser. No. 955,100

Int. Cl.[2] G21F *9/28*

U.S. Cl. 134—3 **15 Claims**

1. Method for the chemical decontamination of radioactively contaminated equipment constructed of a metal selected from the group consisting of chrome-nickel steel, nickel alloys or chrome alloy steel, which comprises subjecting the contaminated equipment to three stages of treatment with an intermediate rinsing with demineralized water between stages as follows:

(a) pretreating the contaminated equipment with an aqueous alkaline permanganate solution at a temperature of 85° C. to 125° C. for about 2 hours

(b) rinsing the equipment after treatment with the alkaline permanganate with demineralized water

(c) treating the rinsed equipment with an aqueous decontamination solution with a pH-value adjusted to about 3.5, containing a citrate and oxalate and an inhibitor, at a temperature of 85° C. to 125° C. for about 2 to 20 hours

(d) rinsing the equipment after treatment with the citrate-oxalate with demineralized water, and

(e) post-treating the rinsed equipment with an aqueous solution of an organic acid and hydrogen peroxide containing suspended inert particles at a temperature of 20° C. to 80° C. for about 2 to 8 hours.

4,226,641

MAT OR RUG CLEANING PROCESS USING ROLLER BRUSH

Howard E. Bode, Sr., P.O. Box 9442, Metairie, La. 70055, and James B. Williams, 5168 Mt. Revarb, Marrero, La. 70072

Filed Feb. 21, 1978, Ser. No. 879,042

Int. Cl.[2] B08B *1/02, 1/04*

U.S. Cl. 134—9 **5 Claims**

1. The method of cleaning a rug comprising the following steps

(a) providing a rug cleaning apparatus comprising:

first rotary feed conveying roller means for conveying a rug to be cleaned;

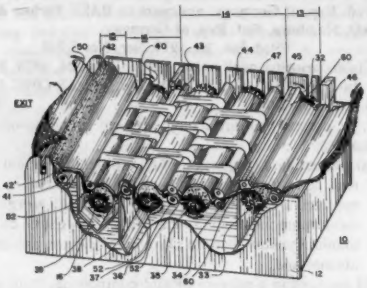
roller brush cleaning means adjacent and substantially parallel to and positioned downstream from said first feed roller means for cleaning the surface of the rug, said roller brush means providing a cleaning brushing surface;

wash water vessel means located under and and at least around said roller brush means for holding washing water for the rug; and

second feed roller means adjacent and substantially parallel to and positioned downstream from said roller brush cleaning means for receiving the rug coming from said roller brush cleaning means and for further conveying the rug;

(b) rotating said roller brush cleaning means with a greater peripheral speed than at least one of said first and second feed roller means;

(c) feeding a rug through said cleaning apparatus with its nap side facing the surface of said roller brush cleaning means, and allowing, with the proper selection of differential speed amount and direction, the differential speeds of the feed roller means and the roller brush cleaning means to cause the rug to bunch up producing a tuck in the rug



along the side of said roller brush cleaning means and between said roller brush cleaning means and at least said one of said feed roller means, the tuck causing the nap of the rug to be opened up, increasing the exposure of the nap to the brushing action of said roller brush cleaning means; and

(d) maintaining during the cleaning of the rug a wash water level in said wash water vessel means around the top of said roller brush cleaning means to directly soak, wet and wash the rug where the tuck is formed and the rug is being brushed by the relatively high peripheral speed of said brushing surface.

4,226,642

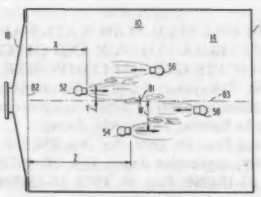
SYSTEM PROVIDING FOR DECONTAMINATION WASHING AND/OR BIOCIDAL TREATMENT

Walter J. Baran, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Feb. 6, 1979, Ser. No. 9,815

Int. Cl.[3] B08B *3/10*

U.S. Cl. 134—10 **20 Claims**



1. Method in which articles are cleaned of soil and biocidally treated in a single chamber capable of operating at pressures other than atmospheric comprising the steps, after articles forming a load to be washed and biocidally treated are placed in the chamber and closing of an access door, of

controllably filling the chamber with washing liquid to a selected level covering the load while establishing a confined air space volume in an upper portion of the chamber above such washing liquid level,

injecting air under pressure subsurface of the washing liquid level through a plurality of inlets having discharges

spaced vertically below the load at a bottom portion of the chamber including at least a pair of inlets positioned in relation to each other to provide an interaction of their discharges on the washing liquid,

such discharges having a major component of discharge oriented horizontally in the bottom portion of the chamber and further oriented with a major component of discharge in the direction of the remaining inlet of the pair such that air discharges from the pair of inlets while exhibiting a major horizontal component pass in contiguous relationship propelling washing liquid in opposite directional relationship forming vertically oriented turbulent vortices in the washing liquid by contiguous passage of such discharges, such vertically-oriented turbulent vortices moving horizontally about the chamber into contact with the load,

such air injection further causing upward movement of air and washing liquid in the chamber,

interrupting such air injection, and

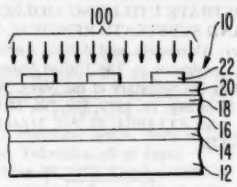
biocidally treating such washed articles in the chamber to provide a desired sterilization level.

4,226,643

METHOD OF ENHANCING THE ELECTRONIC PROPERTIES OF AN UNDOPED AND/OR N-TYPE HYDROGENATED AMORPHOUS SILICON FILM

David E. Carlson, Yardley, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 16, 1979, Ser. No. 58,023
Int. Cl.³ H01L *31/04*; B05D *3/06*
U.S. Cl. 136—258 **15 Claims**



1. A method of forming an N-type layer or an undoped hydrogenated amorphous silicon layer having increased dark conductivity and photoconductivity by the deposition of said layer in an AC or DC proximity glow discharge, said method comprising:

placing a substrate in a proximity glow discharge apparatus;

reducing the pressure to from about 0.3 to about 1 Torr;

heating the substrate to from about 150° to about 400° C.;

introducing a gaseous mixture containing from about 10 to about 90 percent by volume of argon and from about 90 to about 10 percent by volume of silane; and

applying a potential across the electrodes.

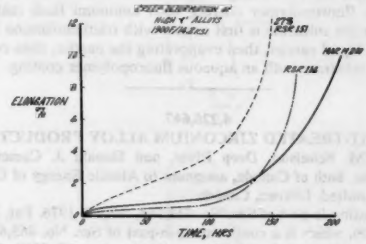
14. In a solar cell having regions of undoped and N-type conductivity hydrogenated amorphous silicon fabricated in an AC or DC proximity glow discharge, the improvement which comprises fabricating said regions on a substrate in a glow discharge atmosphere incorporating argon in an amount from about 10 to about 90 percent by volume of the glow discharge atmosphere, and silane in an amount of from about 90 to about 10 percent by volume of the glow discharge atmosphere at a pressure of from about 0.3 to about 1 Torr, with a substrate temperature of from about 150° C. to about 400° C.

4,226,644

HIGH GAMMA PRIME SUPERALLOYS BY POWDER METALLURGY

Arthur R. Cox, Jupiter; Romeo G. Bourdeau, Tequesta, and Paul R. Holiday, Palm Beach Gardens, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 5, 1978, Ser. No. 939,571
Int. Cl.² C22F *1/10*
U.S. Cl. 148—2 **10 Claims**



1. A method of fabricating an oxidation resistant nickel superalloy article including the steps of:

a. providing an alloy consisting of 7–12% Al, 0–5% Ti, 7–15% Cr, 0–6% Ta, 0–6% Cb, 0–12% W, 0–10% Mo, 0–5% Hf, 0–0.5% C, 0–0.1% B, 0–0.1% Zr, 0–0.5% Y, balance nickel;

b. melting the alloy;

c. solidifying the alloy into particulate form at a rate in excess of 10^4° F./sec. which is sufficient to suppress the formation of low melting eutectic phases; and

d. compacting the solidified particulate form an article; and whereby the incipient melting temperature of the alloys and the elevated temperature mechanical properties of the alloy are increased and so that a more uniform distribution of elements throughout the alloy as obtained resulting in an increased volume fraction of the gamma prime phase being present and in improved oxidation resistance.

4,226,645

STEEL WELL CASING AND METHOD OF PRODUCTION

George M. Waid, Burton, and Robert T. Ault, Shaker Heights, both of Ohio, assignors to Republic Steel Corp., Cleveland, Ohio

Continuation-in-part of Ser. No. 866,754, Jan. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 752,441, Dec. 20, 1976, abandoned. This application Jan. 8, 1979, Ser. No. 1,750
Int. Cl.² C21D *9/08*
U.S. Cl. 148—2 **8 Claims**

1. A process of making well casing characterized by improved hydrogen sulfide stress cracking resistance at high yield strengths ranging from about 90 to 145 ksi comprising the steps of providing an aluminum-killed steel consisting essentially in amounts by weight of from 0.10 to 0.40% carbon, 0.25 to 0.75% manganese, 0.05 to 0.50% silicon, 1.0 to 5.0% chromium, 0.30 to 1.0% molybdenum, 0.05 to 0.55% vanadium, 0.02 to 0.10% aluminum, and the balance iron except normal steel making impurities; rolling and forming the steel into tubular form; austenitizing the casing at a temperature of from 1550° to 1700° F., quenching the casing to obtain a microstructure which is essentially martensite, and tempering the casing at a temperature of from 1200° to 1400° F. to a maximum hardness of 35 R_C and a microstructure which is essentially tempered martensite.

4,226,646

PROCESS OF COATING A FERROUS METAL SUBSTRATE WITH AN AQUEOUS FLUOROPOLYMER COATING

Eustathios Vassiliou, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 26, 1979, Ser. No. 24,096
Int. Cl.[2] C23F 7/00
U.S. Cl. 148—6.14 R **3 Claims**

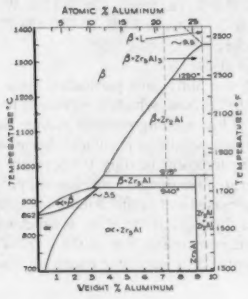
1. A process of coating a ferrous metal substrate with an aqueous fluoropolymer coating with minimum flash rusting wherein the substrate is first coated with triethanolamine in a volatile liquid carrier, then evaporating the carrier, then coating the substrate with an aqueous fluoropolymer coating.

4,226,647

HEAT-TREATED ZIRCONIUM ALLOY PRODUCT

Erland M. Schulson, Deep River, and Donald J. Cameron, Pinawa, both of Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Continuation-in-part of Ser. No. 711,744, Aug. 4, 1976, Pat. No. 4,094,706, which is a continuation-in-part of Ser. No. 465,654, Apr. 30, 1974, abandoned. This application Jun. 12, 1978, Ser. No. 914,829
Claims priority, application Canada, May 11, 1973, 171070
Int. Cl.[2] C21D 1/02; C22D 16/00
U.S. Cl. 148—32.5 **14 Claims**



1. A heat-treated, high tensile strength creep and corrosion resistant zirconium alloy containing 7.0–10.0 wt% aluminum, and 0–3.0 wt% of one or more elements selected from the group comprising magnesium, tin, chromium, iron, carbon, silicon, yttrium, niobium, molybdenum and beryllium, balance, zirconium and incidental impurities, having a substantially continuous matrix of the intermetallic compound Zr_3Al.

11. A corrosion resistant, structural element fabricated from an alloy containing 7.0–10.0 wt% Al, and 0–3.0 wt% of one or more elements selected from the group comprising magnesium, tin, chromium, iron, carbon, silicon, yttrium, niobium, molybdenum and beryllium, balance zirconium and incidental impurities, heat treated in the range from 700° C.–950° C. for a sufficient time to ensure a substantially continuous matrix of the intermetallic compound Zr_3Al.

4,226,648

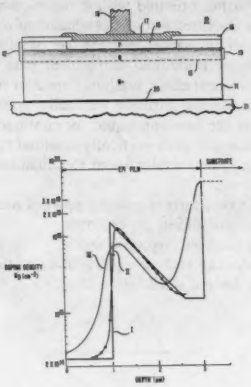
METHOD OF MAKING A HYPERABRUPT VARACTOR DIODE UTILIZING MOLECULAR BEAM EPITAXY

Charles A. Goodwin, Wyomissing, and Yusuke Ota, Slatington, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 16, 1979, Ser. No. 21,226
Int. Cl.[3] H01L 21/203, 21/22
U.S. Cl. 148—175 **4 Claims**

1. A method of fabricating a silicon semiconductor varactor diode of the hyperabrupt junction type in which an epitaxial layer having a PN junction therein is formed on a starting portion of high conductivity and of one conductivity type characterized by the steps of:

(1) growing by molecular beam epitaxy on said starting portion a layer of one conductivity type and during said growing adding an impurity of said one conductivity type



in an increasing amount so that the concentration of said impurity increases to a peak value, and

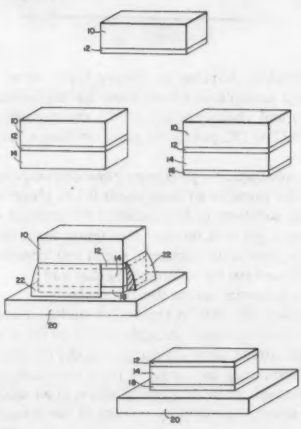
(2) terminating the addition of said impurity to the growing process at the preselected peak value while continuing to grow said epitaxial layer thereby to form a surface-adjoining layer.

4,226,649

METHOD FOR EPITAXIAL GROWTH OF GAAS FILMS AND DEVICES CONFIGURATION INDEPENDENT OF GAAS SUBSTRATE UTILIZING MOLECULAR BEAM EPITAXY AND SUBSTRATE REMOVAL TECHNIQUES

John E. Davey, Alexandria, and Aristos Christou, Springfield, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 11, 1979, Ser. No. 74,448
Int. Cl.[3] H01L 21/203, 21/441
U.S. Cl. 148—175 **18 Claims**



1. A method of growing high-quality super-abrupt thin-film epitaxial layers to form a composite comprising:

polishing one surface of a high-resistivity, low-dislocation-count, germanium substrate,
placing said polished germanium substrate into a vacuum deposition system,
evacuating said system to a high vacuum,
outgassing said substrate by heating said evacuated system to a temperature greater than a molecular beam epitaxial growth temperature,
lowering the temperature of the system to the molecular beam epitaxial growth temperature for GaAs,
growing a thin layer of n-doped GaAs onto said polished surface of said germanium substrate from a n-type doping source,
abruptly shutting off said n-type doping source,
simultaneous with shutting off said n-type doping source, initiating the growth of a semi-insulating layer without interrupting the GaAs growth process to obtain a layer of desired thickness,
growing a thin layer of germanium onto said semi-insulating layer,
reheating said doped substrate sufficiently to deposit a layer of gold onto said thin germanium layer to form a gold-germanium alloy,
removing the layered substrate from said vacuum system and bonding the gold-germanium layer to a carrier substrate,
applying a protective coating to the ends and edges of said composite up to said germanium substrate,
etching said germanium substrate from the layered substrate, and
etching said GaAs layer to tailor said GaAs layer to a desired thickness,
whereby said GaAs layer may be photolithographically processed to form desired structures such as GaAs field-effect-transistors.

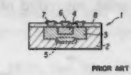
4,226,650

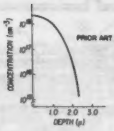
METHOD OF REDUCING EMITTER DIP IN TRANSISTORS UTILIZING SPECIFICALLY PAIRED DOPANTS

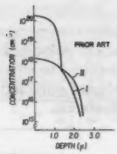
Kouichi Takahashi; Hidekuni Ishida, both of Yokohama, and Toshio Yonezawa, Yokosuka, all of Japan

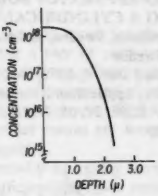
Filed May 30, 1978, Ser. No. 910,909
Claims priority, application Japan, Jun. 9, 1977, 52/67307
Int. Cl.[2] H01L *21/225, 29/36*
U.S. Cl. 148—188 **4 Claims**

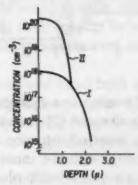
1. A method of manufacturing a semiconductor device comprising:
providing an N type collector layer in an N type silicon semiconductor wafer having a substantially flat surface;
diffusing an N type impurity having a high energy of combination with vacancies and boron which is a P type impurity material through a first opening in a first insulating layer covering said N type collector layer such that a P type base layer in contact with said N type collector layer having a PN junction extending to said surface is formed, said P type base layer having a substantially uniform P type impurity concentration distribution in the direction of depth of said layer;
covering said N type collector layer and said P type base layer with a second insulating layer;
forming a second opening in said second insulating layer, said second opening being smaller than said first opening in said first insulating layer; and
diffusing phosphorus and arsenic which are N type impurity materials through said second opening in said second insulating layer into said P type base layer so that an N type emitter layer is formed which is in contact with said P type base layer having a PN junction extending to said surface and which constitutes a transistor together with said N type collector layer and said P type base layer.











4,226,651

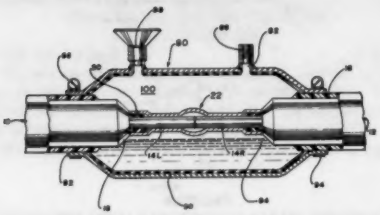
HIGH VOLTAGE CABLE SPLICING - ADDITIVE REACTION

Marvin H. Gold, 5050 Dory Way, Fair Oaks, Calif. 95628

Filed Feb. 1, 1978, Ser. No. 874,104
Int. Cl.[2] H01B *13/00*
U.S. Cl. 156—48 **15 Claims**

1. A process for preparing a splice of two sections of high voltage cable; each of which comprises a conductor portion and original electrical insulation surrounding said conductor portion, the conductor position having an exposed end protruding beyond the end of said insulation, said process comprising:
a. electrically and mechanically joining the exposed ends of said conductor portions to form a conductor,
b. providing semi-conductive material about the electrical junction,
c. surrounding the joined section with a mold,

d. filling the mold with a mixture comprising a liquid polyolefin having addition polymer reactable sites, a chain extension agent reactive with said polyolefin's sites, a particulated solid, saturated polyolefin,



e. heating the mold to a temperature to effect chain extension of at least the liquid polyolefin, and

f. raising the temperature to effect polymeric grafting of the chain extended liquid polyolefin onto the solid polyolefin and the cable insulation.

4,226,652

METHOD AND APPARATUS FOR JOINING A SEALING ELEMENT TO A CYLINDRICAL CONTAINER SLEEVE

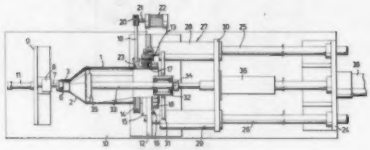
Rolf Berg, Djursholm, Sweden, assignor to Assi Can Aktiebolag, Stockholm, Sweden

Filed Dec. 6, 1978, Ser. No. 966,989

Claims priority, application Sweden, Jun. 6, 1978, 7806619

Int. Cl.[2] B29C *27/08;* B32B *31/20;* B65B *7/28*

U.S. Cl. 156—69 **10 Claims**



1. A method of joining to a cylindrical container sleeve (1) a sealing or closure element (2) provided with a circular collar (4) arranged to be inserted into one open end of the container sleeve, into abutment with the inner wall thereof, at least the collar comprising a heat-meltable plastics material, wherein the sealing or closure element is mounted on the container sleeve with the collar in abutment with the inner wall of said sleeve; wherein the container sleeve and the sealing or closure element are rotated around the cylinder axis of said sleeve; wherein at least one heated body (35) whose temperature exceeds the melting point of the plastics material in the collar is pressed against said collar; and wherein the container sleeve is rotated until the plastics material in said collar has melted, whereafter the heated body is removed out of contact with the plastics material and the plastics material is then permitted to solidify.

5. An apparatus for joining a cylindrical container sleeve (1) to a sealing or closure element (2) provided with a collar (4) made of a heat-meltable plastics material, said collar abutting a ring-shaped end part of the inside of the container sleeve, said collar being firmly welded to the container sleeve within said end part by supplying heat thereto, characterized by: means (6,14) for holding and rotating the container sleeve (1) and the sealing or closure element (2) around the cylinder axis of the container sleeve; at least one welding member (35) arranged to be maintained by heated means (39) at a temperature which exceeds the melting point of the plastics material; movement means (27, 33, 36, 38) for moving the welding member into contact with said collar to melt it during rotation of the container sleeve and for moving said welding member (35) out of contact with the molten plastics material after a given interval of time has lapsed.

4,226,653

METHOD FOR THE CONTINUOUS PRODUCTION OF AN OPTICAL TRANSMISSION ELEMENT

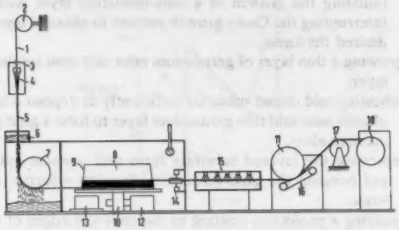
Ulrich Oestreich, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 21, 1978, Ser. No. 971,698

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757786

Int. Cl.[2] B29C *27/24;* G02B *5/14*

U.S. Cl. 156—73.5 **3 Claims**



1. A method for the continuous production of an optical transmission element comprising a light waveguide fiber loosely received in an hose-like casing with the fiber having an excess length relative to the length of the casing, said method comprising the steps of pulling the fiber from a storage reel; controlling the speed of removal from the reel by applying a braking force to the reel; surrounding the fiber with a hose-like casing to form an optical transmission element; heating the element to a temperature, which is required for creating a necessary excess length between the casing and the fiber; passing the heated element around a tempered drum with a sufficient number of loops so that the hose-like casing and the light waveguide fiber are tightly coupled to one another due to friction and as a consequence of the friction, the speed of the casing on a support surface of the drum is the same as the fiber speed as the element is removed from the drum; removing the element from the drum; cooling the removed element to form a finished element; and then winding the finished element on a spool.

4,226,654

MANUFACTURE OF TIRES

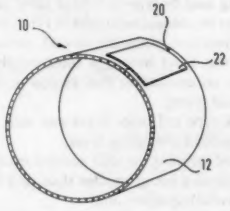
Maurice A. Young, Birmingham, England, assignor to Dunlop Limited, London, England

Filed Apr. 18, 1978, Ser. No. 897,442

Claims priority, application United Kingdom, May 3, 1977, 18547/77

Int. Cl.[2] B29H *17/08*

U.S. Cl. 156—123 R **11 Claims**



1. A method for the manufacuture of a tire which is substan-

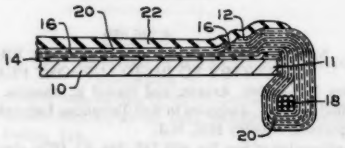
tially free of discontinuities in the circumferential direction including a carcass composed of a single ply of cord fabric wherein the cords are orientated at substantially 90° to the mid-circumferential plane of the tire, said method comprising the steps of firstly assembling into a cylindrical pocket a ply of rubberized cord fabric including a warp of reinforcing cords and a weft of threads having a low tensile strength and a low elastic modulus relative to the warp cords, the wrap cords being aligned substantially parallel to the axis of the cylinder, such that in said pocket the ends of said ply abut substantially without overlapping; secondly laying over the joint between the ends of said ply an unwoven cover strip of a sheet material comprising low tensile strength and low elastic modulus threads of mechanical properties similar to said weft threads and embedded in rubber compound, the strip being arranged such that its threads are orientated substantially at 90° to the ply joint, and thirdly shaping said pocket into toroidal form.

4,226,655

METHOD FOR BUILDING A TIRE

John R. Bush, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jan. 2, 1979, Ser. No. 394
Int. Cl.[3] B29H *17/24*; B60C *15/06*
U.S. Cl. 156—132 **4 Claims**



1. The method of making a tubeless pneumatic tire comprising the sequential steps of:

(a) assembling upon a cylindrical drum at least two axially spaced nonwicking finishing strips, wherein a minor portion of the width of said finishing strip is contacting the outer surface of said drum;

(b) folding a major portion of the width of said finishing strip down such that said major portion is nearer to the horizontal axis of said drum than said minor portion of said finishing strip;

(c) applying a layer of air-impervious liner to said drum, wherein said liner extends over the edge of said minor portion of said finishing strip;

(d) applying a first body layer comprising at least one ply of rubber coated cord fabric and folding said fabric down to cover the outer edges of said drum;

(e) applying a bead core over each axially outer edge of the first body layer at either end of said drum and turning each of said edges up over the respective bead core;

(f) applying a second body layer comprising at least one ply of rubber coated cord fabric and turning the outer edges of said second body layer down around the respective bead core;

(g) turning said major portion of said finishing strips up around the respective bead core such that said finishing strip covers the edge of said second body layer;

(h) applying rubber externally of said body layers to constitute the tread and sidewall portions of the completed tire;

(i) removing the assembled materials as a cylindrical uncured tire from the building drum; and

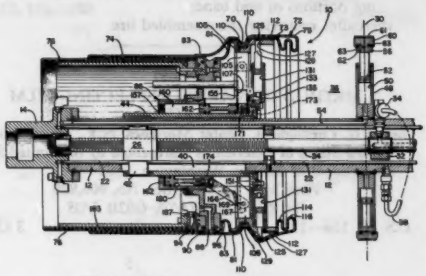
(j) vulcanizing the uncured tire in a torodial configuration.

4,226,656

TIRE CARCASS ASSEMBLY

Paul E. Appleby, Cuyahoga Falls; Denver C. Folden, Akron; Joseph F. Stalter, Jr., Mogadore, and Harry R. Swanson, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 2, 1979, Ser. No. 26,391
Int. Cl.[3] B29H *17/22, 17/26*
U.S. Cl. 156—132 **22 Claims**



1. A method of building a tire comprising in sequential combination the steps of:

disposing an endless carcass band loosely about carcass shaping means having a pair of carrier means movable symmetrically toward and away from a center plane fixed normal to the direction of movement of said carrier means and having band holding means axially fixed at said center plane and which carrier means are located initially at a first axial distance apart;

expanding circumferentially an axially narrow central portion of said band sufficiently only to resist axial displacement of said band by expanding said holding means to engage and to centralize said band with respect to the axis of said shaping means;

expanding said band circumferentially in two axial portions located symmetrically with respect to said central portion by expanding spreader means carried respectively by said carrier means;

smoothing and tensioning said band both axially and circumferentially by moving said spreader means while so expanded symmetrically axially away from said center plane to a second distance apart greater than the first-mentioned distance;

locating a first and a second bead ring respectively about and radially spaced outwardly of said band;

then fixing each said bead ring and said band relative to each other by expanding circumferentially beadseating means carried respectively on said carrier means adjacent to and respectively axially outward of the respective spreader means to expand circumferentially the axial zones of said band respectively immediately underlying each said bead;

shaping said band between said bead rings outwardly from said holding means by moving said carrier means axially symmetrically toward said center plane to a third distance between the bead rings which distance is greater than the maximum axial width of the tire when mounted and inflated for use and the first-mentioned distance and less than the second-mentioned distance while applying a first air pressure to expand said band;

causing said band to engage coaxially disposed annular restricting means disposed symmetrically of said center plane;

thereafter applying to said band adjacent to the axial zones underlying said bead rings, a second air pressure greater than said first pressure by expanding a first pair of bladders affixed circumferentially respectively to said beadseating means and extending axially inward respectively therefrom and concurrently;

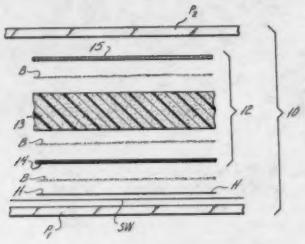
turning the respective ends of said band radially outwardly around each said bead ring by inflating a second pair of bladders circumferentially affixed respectively to siad beadseating means and extending axially outward therefrom and by then inflating a third pair of bladders in contact with and circumferentially affixed on said carrier means to underlie respectively said second pair of bladders to urge the latter toward said first pair of bladders to compact said ends to the respective bead rings and opposing portions of said band;

thereafter removing the assembled tire.

4,226,657
METHOD OF MAKING REFLECTING FILM REFLECTOR

James G. Cottingham, Center Moriches, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 17, 1978, Ser. No. 906,820
Int. Cl.[2] B32B *31/08*; G02B *5/08*
U.S. Cl. 156—196 **3 Claims**



1. A method of bonding a reflecting film to a rigid substrate comprising:

(a) sandwiching a nonbonding adhesive medium between a smooth, simply curved receptor surface and a reflecting film, said surface having a radius of curvature great enough that said film may conform to said surface without wrinkling;

(b) bonding said substrate to the opposite side of said film with a bonding adhesive medium while said film is held in smooth contact with said surface by said nonbonding medium, said nonbonding medium further comprising a liquid soap having a temporary adhesion greater than the stresses upon said film generated by the application and curing of said bonding adhesive medium; and,

(c) removing said film and said bonded substrate from said surface after curing of said bonding adhesive medium.

4,226,658
METHOD OF MAKING RETROREFLECTIVE LAMINATE

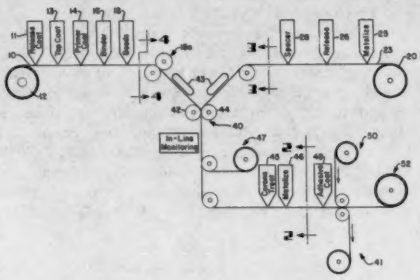
Russell L. Carlson, Tallmadge; David L. Eastin, Hudson; Ralph H. Loehning, Stow, and William E. Stalker, Cuyahoga Falls, all of Ohio, assignors to Morgan Adhesives Company, Stow, Ohio

Filed Jan. 12, 1979, Ser. No. 2,984
Int. Cl.[2] B32B *31/08*; G02B *5/128*
U.S. Cl. 156—247 **4 Claims**

1. A method for forming a retroreflective laminate comprising a top coat layer, a binder layer, spaced optical beads in and protruding from the binder layer, a spacer layer, and a metal film adhered to one face of the spacer layer which is characterized by

(a) forming the spacer layer on a fibrous paper carrier with a release layer thereon, said carrier having uniform compressibility over its entire surface and having more but shorter fibers than average papers, said carrier being clay coated on one face and said release layer being in contact with said one face,

(b) laminating the spacer layer together with the paper carrier to the binder layer with the protruding beads



engaging said spacer layer, the fibrous paper carrir supporting the spacer layer to prevent stretching thereof during laminating,

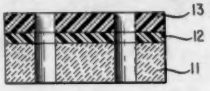
(c) removing the paper carrier, and

(d) applying a metal film to the spacer layer.

4,226,659
METHOD FOR BONDING FLEXIBLE PRINTED CIRCUITRY TO RIGID SUPPORT PLANE

Gary L. Griffith, Arvada, and Nawal K. Sharma, Broomfield, both of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 648,288, Jan. 12, 1976, abandoned. This application Dec. 27, 1976, Ser. No. 754,122
Int. Cl.[2] B41M *3/08*
U.S. Cl. 156—305 **2 Claims**



1. A method of forming a printed circuit device comprising a rigid perforate substrate having an insulating surface bonded to one face of a two-faced flexible insulating sheet having thin conductive patterns produced on each of said faces, said flexible sheet having conductive through holes electrically connecting portions of the pattern on one face to portions of the pattern on the opposite face, which comprises the steps of:

(a) depositing a layer of a tacky contact adhesive comprising a rubber modified epoxy resin containing dispersed polyester fibers upon the rigid perforate substrate member,

(b) aligning said flexible insulating sheet upon the epoxy resin-coated surface of the substrate,

(c) attaching the flexible insulating sheet to the epoxy resin-coated surface of the substrate by applying sufficient pressure thereto to establish a firm contact bond,

(d) selectively removing adhesive in the through holes with a solvent selected from the group consisting of 1,1,1-trichloroethylene, trichloroethane and methylene chloride, thereby resulting in registration of through holes in the sheet with perforations in the rigid substrate, and

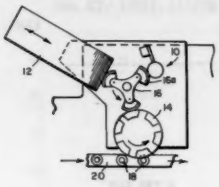
(e) curing the adhesive to an insoluble state.

4,226,660

DOCTOR BLADE FOR LABELING MACHINE

Sidney T. Carter, Shrewsbury, Mass., assignor to A-T-O Inc., Willoughby, Ohio

Filed May 24, 1979, Ser. No. 42,040
Int. Cl.[3] B65C 9/08, 11/04
U.S. Cl. 156—357 7 Claims



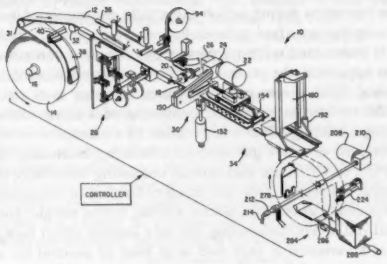
1. The combination with a glue applying roll, label magazine and picker, so arranged that the picker is movable in a path to first receive glue from the glue applying roll and then engage a label in the magazine, said label magazine being retractable from said path, of means for supplying glue to the glue applying roll so that it spreads over the surface thereof, a doctor blade supported adjacent the glue applying roll with an edge spaced from and parallel thereto, means for retracting the magazine and means operable simultaneously with the retraction of the magazine to move the doctor blade closer to the surface of the glue applying roll to prevent an accumulation of an excessive amount of glue on the picker.

4,226,661

APPARATUS AND METHOD FOR PREFABRICATING POCKETS

Joseph W. A. Off, Irving; Judson H. Early, Dallas, and William B. Greer, Grand Prairie, all of Tex., assignors to Haggar Company, Dallas, Tex.

Filed Dec. 19, 1978, Ser. No. 971,022
Int. Cl.[2] B31F 1/00; B32B 31/00; B65C 11/04
U.S. Cl. 156—358 24 Claims



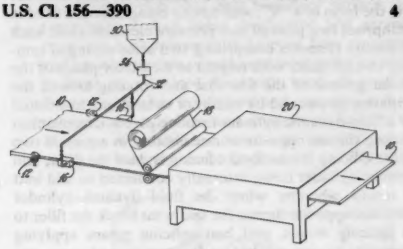
1. Apparatus for prefabricating pockets, which comprises:
feed means for selectively advancing pocket material of a predetermined width along an input path;
adhesive applicator means located along the input path for selectively attaching predetermined strips of adhesive adjacent the edges of the pocket material;
cutter means positioned beyond the adhesive applicator means and along the input path for selectively cutting the pocket material to provide pocket blanks with strips of adhesive attached thereto;
means located beyond the cutter means and along the input path for aligning and folding each successive pocket blank; and
rotatable pocket wheel means for receiving the successive folded pocket blanks from the aligning and folding means and for activating at least portions of the adhesive strips therein to form prefabricated pockets.

4,226,662

APPARATUS FOR TREATING FIBROUS BOARDS

Ralph E. McCort, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 28, 1978, Ser. No. 974,165
Int. Cl.[2] B32B 31/00; B05G 11/00; B05D 5/00
U.S. Cl. 156—390 4 Claims



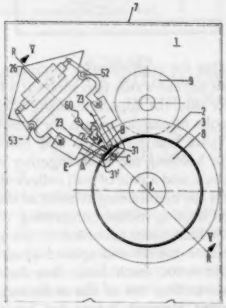
1. Apparatus for treating a fibrous board comprising:
a. means for cutting away a portion of an edge of the board to form a remaining edge portion on the board;
b. means for applying a facing to said board; and,
c. means for applying a liquid adhesive to the top, side and bottom of said remaining edge portion, said means for applying, comprising a generally block-shaped member having a channel positioned therein for the passage of said remaining edge portion therethrough, said channel having beveled inlet surfaces, a conduit for supplying said liquid adhesive into said channel, and trough-shaped branch conduits adapted to spread said liquid adhesive to all sides of said channel, said branch conduits being positioned in the side, top and bottom, respectively, of said channel.

4,226,663

APPARATUS FOR ASSOCIATING A BEAD FILLER WITH A BEAD CORE OF A VEHICLE TIRE

Dante Pirovano, and Cesare Migliarini, both of Milan, Italy, assignors to Industrie Pirelli, S.p.A., Milan, Italy

Filed Nov. 9, 1978, Ser. No. 959,338
Claims priority, application Italy, Dec. 15, 1977, 30179 A/77
Int. Cl.[2] B29H 17/32
U.S. Cl. 156—422 15 Claims



1. An automatic device for the continuous application of elastomeric fillers on bead cores of pneumatic tires, each filler comprising a base and an upper part of pre-established shape, said filler having a length equal to the outermost peripheral

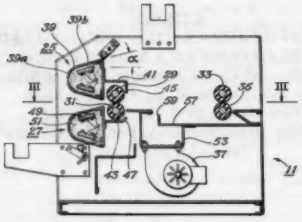
layout of the bead core, said device comprising a fixed frame to which are associated two discs in mutual contact along their periphery in order to rotate simultaneously, the first disc comprising a first annular groove to encase the bead core, the second disc comprising a second annular groove into which the upper part of the filler slides in a tangential direction, said second annular groove being able to dispose the base of the filler on the bead core rotating with the first disc as long as the filler base covers the outermost peripheral layout of the bead core and the two facing ends of the upper part of the filler are opened in the form of a "V", said device being characterized in that it comprises two pairs of two pressure elements each, each pair of pressure elements comprising two arms arranged symmetrically to each other with respect to the center plains of the first annular groove of the first disc and rotating around the axis of rotation at one end by means of at least one associated piston of a fluid-dynamic cylinder forming part of a mechanism for imparting thrusts opposite to one another in a pair of two arms, a butt splicing means for the facing ends of the filler, said fluid-dynamic cylinder being externally connected to said butt splicing means whereby when the fluid dynamic-cylinder applies the said opposite thrusts the said arms block the filler to the butt splicing means, said butt splicing means applying thrusts opposite to one another on the two pair of arms, and adjusting and centering means for orientating the first disc comprising the filler in respect of the position of the central symmetrical plane of the two pair of pressure elements, said means comprising a body of geometrical form having at least two lateral faces forming a "V", said body being actuated by a suitable control unit which moves said body between the two facing ends of the filler.

4,226,664

LAMINATING APPARATUS

Myron W. Shaffer, Irving, Tex., assignor to Laminating Equipment, Inc., Pantego, Tex.

Division of Ser. No. 771,179, Feb. 23, 1977, Pat. No. 4,090,911.
This application May 8, 1978, Ser. No. 903,758
Int. Cl.[2] B32B *31/00*; B31F *5/00*
U.S. Cl. 156—499 **1 Claim**



1. In an apparatus for continuously laminating articles with a plastic having an adhesive side that melts at a lower temperature than the other side, the apparatus being of the type having a pair of supply rolls of plastic, means for drawing webs from the supply rolls past heating means and through a pair of pressure rollers for bonding the webs together with the article sandwiched between, and a pair of pull rollers mounted behind the pressure rollers for maintaining tension as the bonded webs cool, an improved heating means comprising:

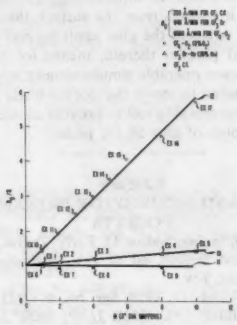
upper and lower heat shoes mounted to the apparatus adjacent the pressure rollers and spaced apart vertically for contacting the webs, each heat shoe having a heating surface for contacting one of the webs and containing an electrical heater element means for heating the entire heating surface to a substantially uniform temperature above the melting temperature of the adhesive side, the heating surface having an arcuate portion joined by upper and lower planar surfaces symetrical with each other and extending rearward tangental to the arcuate portion, each web being drawn over the upper planar surface, the arcuate portion, and the lower planar surface of one of the heat shoes; the lower planar surface of the upper heating shoe being separates sufficiently from the upper planar surface of the lower heat shoe so that the webs and sandwiched article are not squeezed by the heat shoes.

4,226,665

DEVICE FABRICATION BY PLASMA ETCHING

Cyril J. Mogab, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 31, 1978, Ser. No. 929,568
Int. Cl.[2] H01L *21/306*; C23F *1/02*
U.S. Cl. 156—643 **24 Claims**



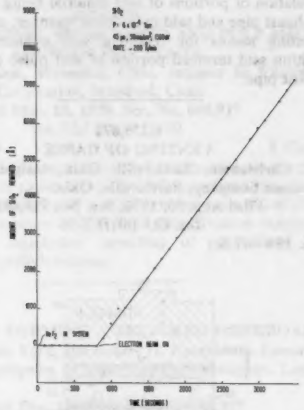
1. Process for fabrication of at least one article comprising at least one operation during which the article undergoing fabrication comprises a surface to be etched wherein the said article surface is maintained within a plasma environment contained within an apparatus, the plasma resulting from imposition of an rf electrical field across gaseous matter between two electrodes, the surface to be etched consisting of a composition manifesting a loading effect when etched by a plasma environment produced across a gas mixture consisting essentially of CF_4 and O_2, or CCl_4, the said surface consisting essentially of a composition selected from the group consisting of elemental silicon, elemental aluminum, silicon nitride, boron nitride, and resists utilized in SIC processing, the said loading effect being defined as a variation in etch rate of at least 25 percent for a loading variation of from 10 percent capacity to 100 percent capacity for the said apparatus, etching being primarily due to reaction of the said surface with a primary etchant species characterized in that the said gaseous matter is of composition such as to result in two active chemical species within the said plasma, in which the two species are chemically distinct, the first of which, denoted primary etchant species, reacts with the said surface to result in removal of surface material and the second of which, denoted recombinant species, primarily serves to combine with unreacted primary etchant species to result in the said mean inherent lifetime, and in which the amount of recombinant species is maintained at a level sufficient to reduce mean inherent lifetime of the primary etchant species to a value which is no more than one-tenth as great as the mean lifetime due to chemical reaction with the surface resulting in etching.

4,226,666

ETCHING METHOD EMPLOYING RADIATION AND NOBLE GAS HALIDE

Harold F. Winters, San Jose, Calif., and Brian N. Chapman, Mahopac, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 21, 1978, Ser. No. 934,734
Int. Cl.[2] H01L *21/306*
U.S. Cl. 156—643 31 Claims



1. A method for etching a surface wherein all of the constituents of the surface are capable of forming volatile substances which comprises exposing the surface to be etched to at least one noble gas halide and to radiation selected from the group of ion beam radiation, electron beam radiation, nuclear radiation, actinic light, and mixtures thereof at about the same time for a period of time to etch the surface to the desired extent.

4,226,667

OXIDE MASKING OF GALLIUM ARSENIDE

Ralph A. Logan, Morristown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 31, 1978, Ser. No. 956,392
Int. Cl.[2] H01L *21/308*
U.S. Cl. 156—656 6 Claims

1. In a process of manufacturing an $Al_xGa_{1-x}As$ device which includes the formation of a layer of native oxide on the device that is to be selectively patterned subsequent to the heating of the device to a temperature at which the oxide becomes insoluble as a result of change in composition of the oxide and more resistant to selective patterning, the step of covering the native oxide with a capping material which prevents the change in composition during subsequent heating whereby selective patterning is facilitated.

4,226,668

SPRAY DRYING APPARATUS UTILIZING PULSE JET ENGINES

Frederick A. Ferguson, Yelm, Wash., assignor to Sonic Dehydrators, Inc., Weiser, Id.

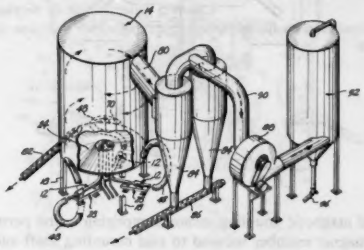
Filed Dec. 14, 1978, Ser. No. 969,398
Int. Cl.[2] B01D *1/14*
U.S. Cl. 159—4 A 12 Claims

1. Spray drying apparatus comprising:

a drying chamber having a first boundary surface and a boundary wall extending outwardly from the periphery of said first boundary surface;

at least one pulse jet engine having an exhaust pipe, an air intake section and a combustion chamber positioned between said exhaust pipe and said air intake section, said exhaust pipe of each of said pulse jet engines extending to said first boundary surface of said drying chamber for exhausting high temperature gaseous flow inwardly into said drying chamber;

at least one air augmentation duct, each augmentation duct having an entrance opening positioned in spaced apart juxtaposition with the opening in the air intake section of an associated pulse jet engine, each air augmentation duct being configured to enter said drying chamber at a predetermined position in said boundary wall and proximate to said periphery of said first boundary surface, each air augmentation duct being configured and arranged for receiving high temperature gaseous flow emerging from said air inlet section of said associated pulse jet engine and ambient air entrained therewith, each air augmentation duct being further configured and arranged to direct said received gaseous flow and ambient air into said drying chamber to establish substantially circumferential flow along at least the outer regions of said first boundary



surface, said circumferential flow established by air augmentation ducts interacting with the upwardly directed gaseous flow supplied by said pulse jet engine exhaust pipes to create inwardly and circumferentially directed flow in the direction away from said first boundary surface of said drying chamber; and

supply means for introducing the material to be dried into said exhaust pipe of each of said pulse jet engines, said high temperature gaseous flow within each of said exhaust pipes and attendant high level acoustic energy supplied by said pulse jet engines atomizing said material and effecting substantial moisture removal as said material passes through said exhaust pipe and into said drying chamber, said inwardly and circumferentially directed gaseous flow established by said air augmentation ducts and said inwardly directed flow of pulse jet engine exhaust carrying said atomized material into and about said drying chamber for additional moisture removal.

4,226,669

VACUUM CENTRIFUGE WITH MAGNETIC DRIVE

Frank Vilardi, Nesconset, N.Y., assignor to Savant Instruments, Inc., Hicksville, N.Y.

Filed May 9, 1979, Ser. No. 37,429
Int. Cl.[3] B01D *1/00*
U.S. Cl. 159—6 R 10 Claims

1. A high speed centrifugal concentrator comprising a housing divided into a vacuum chamber and a base section,

said vacuum chamber having side and bottom walls, a cover constituting the top wall thereof, and means pivotally mounting one end of said cover on said vacuum chamber for movement between an upstanding open position and a closed position in which it closes off said vacuum chamber in sealed, air-tight condition,

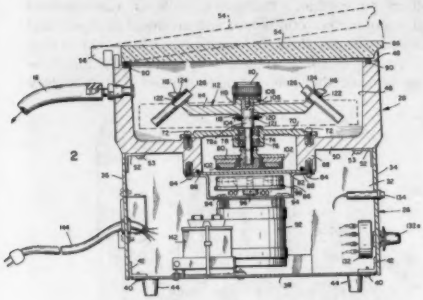
a centrifuge rotor,

means mounting said centrifuge rotor for rotation within said vacuum chamber, said mounting means including a mounting shaft journalled on said vacuum chamber and secured to said rotor,

an electric drive motor for said centrifuge rotor mounted within said base section externally of said vacuum chamber and remote therefrom,

electric circuit means for controlling the operation of said motor and including means for dynamically braking said motor,

magnetic coupling means for providing a magnetic drive connection between said motor and said centrifuge rotor and creating a magnetic field passing through a wall of said vacuum chamber, whereby said centrifuge rotor is rotated within said vacuum chamber in response to operation of said drive motor,



said magnetic coupling means comprising a first permanent magnet member secured to said mounting shaft and having a plurality of permanent magnets mounted thereon, and a second permanent magnet member secured to the drive shaft of said motor and having a corresponding member of permanent magnets of opposite polarity mounted thereon,

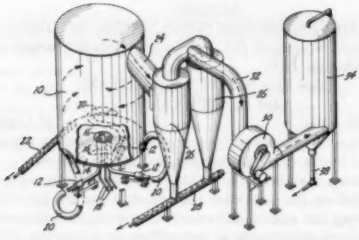
and a safety interlock switch mounted on said vacuum chamber and operatively associated with said cover for energizing said means for dynamically braking said drive motor when said cover is in its open position.

4,226,670

MATERIAL INJECTION NOZZLE FOR PULSE JET DRYING SYSTEMS

Frederick A. Ferguson, Yelm, Wash., and Rodney D. Payne, Saratoga, Calif., assignors to Sonic Dehydrators, Inc., Weiser, Id.

Filed Dec. 14, 1978, Ser. No. 969,397
Int. Cl.[2] B01D *1/14*
U.S. Cl. 159—16 R **6 Claims**



1. A material injection nozzle for a pulse jet drying system of the type wherein the material to be dried flows through a material feedpipe which passes into and along the exhaust pipe of a pulse jet engine for introduction of the material into the hot gaseous flow stream and high level acoustic energy within said exhaust pipe and wherein said material feedpipe is terminated a predetermined distance from the exhaust opening of said exhaust pipe, said material injection nozzle comprising:

a substantially cylindrical member positioned coaxially within the terminal region of said pulse jet engine exhaust pipe, said cylindrical member coaxially surrounding at least the terminal portion of said material feedpipe, said cylindrical member being dimensioned for interaction with said high temperature gaseous flow stream and said acoustic energy within said exhaust pipe to prevent accumulation of portions of said material being dried on said exhaust pipe and said cylindrical member; and

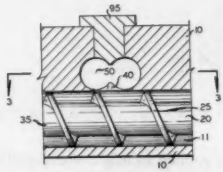
mounting means for retaining said cylindrical member within said terminal portion of said pulse jet engine exhaust pipe.

4,226,671

VENTING OF GASES

Don C. Christensen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 30, 1976, Ser. No. 718,485
Int. Cl.[2] B01D *1/00*
U.S. Cl. 159—47 R **1 Claim**



1. A method for venting gases containing entrained particulate matter and mist from a container, said method comprising:

(1) passing said venting gases from a vent opening in said container into an opening in a vent collecting device comprising a casing containing at least one bore, said bore having means for venting gas at its ends and containing at least one screw having pitched flights, said vent collecting device mounted in relation to said vent opening so that venting gases are passed into said bore of the collecting device between the means for venting gas from the bore;

(2) trapping in the flights of said at least one screw the particulate matter and mist entrained in the venting gases; and

(3) rotating said at least one screw in a manner to move the trapped particulate matter to a collection point.

4,226,672

PROCESS OF SEPARATING ASBESTOS FIBERS AND PRODUCT THEREOF

Victor J. Absolon, Plaisir, France; George T. Hurst, Newport, Australia; John C. Worboys, Doncaster, Australia; George H. Barnett, North Balwyn, Australia, and Ross P. Dickson, Oakleigh, Australia, assignors to ICI Australia Limited, Melbourne, Australia

Filed Jun. 27, 1978, Ser. No. 919,549
Claims priority, application Australia, Jul. 1, 1977, PD0669; Jul. 1, 1977, PD0670; Jul. 1, 1977, PD0671; Jul. 1, 1977, PD0672; Jul. 1, 1977, PD0673; Jul. 1, 1977, PD0674; Jul. 1, 1977, PD0678; Jul. 1, 1977, PD0680; Jul. 1, 1977, PD0681; Nov. 10, 1977, PD2006
Int. Cl.[3] C03B *37/00*
U.S. Cl. 162—3 **43 Claims**

1. A process for separating asbestos fibres from asbestos-bearing material selected from the group consisting of crude ore, fibre concentrates, mine wastes and tailings, which process includes the following steps:

(1) a contacting step where the asbestos-bearing material is treated with a solution containing a surfactant adsorbable

on or reactable with asbestos to form a viscous slurry dispersion,
(2) a mechanical fiberising step,
(3) a dilution step to reduce slurry viscosity without inducing coagulation of the fibres,
(4) a classification step to remove unwanted grit,
(5) a slurry dilution step sufficient to induce coagulation of fibres and form stringy fibre agglomerates, and
(6) a dewatering step to recover the asbestos fibres.

4,226,673

COLOR REMOVAL FROM PAPER AND PULP MILL AQUEOUS EFFLUENTS

Henry A. Fremont, Wyoming, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Filed Mar. 15, 1976, Ser. No. 666,917
Int. Cl.[3] D21C *11/00*
U.S. Cl. 162—29 **5 Claims**

1. The method of removing color bodies present in an aqueous effluent from paper and pulp mill manufacturing operations comprising subjecting said effluent having a pH of about 11.5 and a temperature of 135° F. to ultrafiltration through a semi-permeable membrane consisting of polysulfone film coated with polyethyleneimine.

4,226,674

METHOD OF FORMING A TEXTURED FIBERBOARD

William G. Gross, York, and Robert H. Hutchinson, Lancaster, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Dec. 13, 1978, Ser. No. 969,107
Int. Cl.[2] D21F *11/06, 11/12*
U.S. Cl. 162—109 **1 Claim**

1. A process for forming a fiberboard structure with a rough textured surface, wherein said board is formed on the conventional Oliver single cylinder vacuum machine which has a rotating cylinder partially immersed in a reservoir containing a slurry of fibrous material, said cylinder having vacuum chambers therein so that when the slurry is brought in contact with the cylinder, the water of the slurry passes into the vacuum chambers of the cylinder and the fibrous material is deposited on the surface of the cylinder to form a fibrous mat, comprising the steps of:
(a) placing the fiber slurry in the reservoir containing the vacuum cylinder and rotating said cylinder in said slurry to draw water into the vacuum chambers of the cylinder and cause the fibrous material of the slurry to deposit upon the outer surface of said cylinder.
(b) the improvement comprising:
(1) operating the vacuum of the rotating cylinder on a low vacuum level of 3–5 inches of mercury,
(2) maintaining the slurry level in the reservoir containing the cylinder at a point about 5 inches below the center line of the rotating cylinder,
(3) decreasing the normal slurry liquid agitation to a point where clumps of fibrous material are formed in the slurry, and
(4) not contacting the surface of the fibrous mat formed with any type of pressure roll structure so as to dewater the board or to smooth the surface texture of the mat formed on the rotating cylinder.

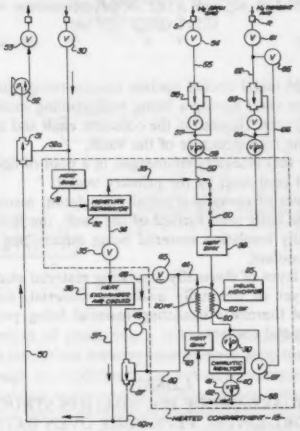
4,226,675

METHOD AND APPARATUS FOR MONITORING AND MEASURING A GAS

Gary W. Lewis, Fountain Valley, and Alfred D. Robinson, El Monte, both of Calif., assignors to Comsip Delphi, Inc., El Monte, Calif.

Filed May 23, 1977, Ser. No. 799,307
Int. Cl.[2] G21C *17/00;* G01N *31/12*
U.S. Cl. 176—19 R **11 Claims**

1. Apparatus for continuously monitoring and signalling the quantity of a preselected gas in a mixture of gases from a nuclear reactor pressure vessel comprising
a compartment maintained at a preselected temperature,
gas inlet means located outside of the compartment for continuously receiving a sample of gas to be monitored from a gas sample source and continuously conveying the sample to said compartment so as to continuously maintain the gas sample at said preselected temperature, while being conveyed through said compartment to thereby maintain the concentration of the mixed gases of the gas sample source,
means located within the compartment for continuously receiving the gas from the inlet means and for continuously separating out a relatively small portion of the gas sample for measurement purposes,
thermal conductivity gas sensing means arranged within said compartment for continuously measuring and signalling the quantity of a preselected, known gas in the gas sample,
means for continuously conveying said small portion of the gas sample to said sensing means,
catalytic reaction means arranged within said compartment



for continuously altering one of the gas constituents in the gas sample conveyed therethrough,
means for continuously conveying said small portion of the gas sample to said reaction means.
means for continously conveying the reacted, sensed gas from said reaction means through said sensing means,
means arranged within said compartment for continuously receiving the small portion of measured gas from said sensing means for maintaining a substantially constant mass flow of gas through said sensing means,
means for continuously rendering said sensing means independent of the pressure of the gas received from said source,
means arranged outside of said compartment for cooling gas, and
means for continously conveying the remaining portion of the unmeasured gas from said separation means to the gas cooling means, and gas outlet means for continuously combining and conveying the cooled gas with the measured gas portions received from the constant mass flow control means for continuous conveyance back to the gas sample source.

4,226,676

LIQUID METAL COOLED NUCLEAR REACTORS

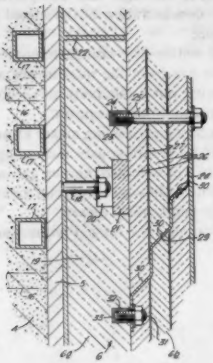
Sidney Barnes, Grappenhall, England, assignor to Nuclear Power Company Limited, London, England

Filed May 18, 1978, Ser. No. 907,350

Claims priority, application United Kingdom, Jun. 3, 1977, 23754/77

Int. Cl.[2] G21C 9/00

U.S. Cl. 176—38 5 Claims



1. A liquid metal cooled nuclear reactor comprising,
a concrete vault having a lining with cooling means
a primary vessel housed in the concrete vault and suspended from the roof structure of the vault,
a nuclear fuel assembly submerged in a pool of liquid metal coolant contained by the primary vessel,
a first layer of ceramic thermally insulating material cladding the inner wall surface of the vault, the first layer of thermally insulating material being impervious to liquid metal coolant,
a second layer of thermally insulating material cladding the first layer of thermally insulating material, the second layer of thermally insulating material being pervious to liquid metal coolant.

4,226,677

EARTHQUAKE-PROOF FOUNDATION STRUCTURE FOR HORIZONTAL TYPE COKE OVEN BATTERY

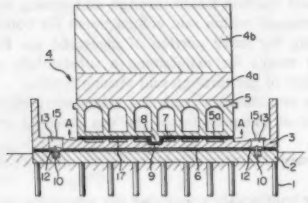
Akira Saito; Yushichi Miura, and Koichiro Bando, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1979, Ser. No. 9,954

Claims priority, application Japan, Feb. 27, 1978, 53/21009

Int. Cl.[3] C10B 5/00, 29/08; E02D 27/34

U.S. Cl. 202—138 3 Claims



1. An earthquake-proof foundation structure for a horizontal type coke oven battery, which comprises:
a plurality of foundation piles driven substantially vertically into the ground;
a pile plate rigidly connected substantially in a horizontal position to the tops of said plurality of foundation piles;
a base plate for mounting thereon a horizontal type coke oven battery, said base plate being placed substantially in a horizontal position on said pile plate, said coke oven battery comprising a regenerator, a plurality of coking ovens and combustion chambers alternately arranged in the horizontal direction on said regenerator, and a sole flue installed directly below said regenerator; and
two sliding layers each arranged between said pile plate and said base plate and between said base plate and said sole flue of said coke oven battery, each of said two sliding layers being formed by tightly laying a plurality of steel sheets coated with graphite grease over the entire surface thereof into at least two laminations, among the surfaces of said plurality of steel sheets, those being in contact with the upper surface of said pile plate, the lower surface of said base plate, the upper surface of said base plate and the lower surface of said sole flue of said coke oven battery not being coated with graphite grease;
said foundation structure being characterized in that:
one of the lower surface of said sole flue of said coke oven battery and the upper surface of said base plate is provided with a longitudinal ridge and a plurality of transverse ridges, while one of the upper surface of said base plate and the lower surface of said sole flue of said coke oven battery is provided with a longitudinal groove and a plurality of transverse grooves to engage with said longitudinal ridge and said plurality of transverse ridges at locations corresponding to said riges, thereby said coke oven battery being mounting on said base plate in a state in which said longitudinal ridge and said plurality of transverse ridges respectively engage with said longitudinal groove and said plurality of transverse grooves corresponding thereto; and
said pile plate and said base plate are connected to each other on the both longitudinal sides thereof by a plurality of buffers each of which comprises a bolt fixed with a plurality of reinforcing ribs at the lower portion thereof and an elastic ring engaging with the upper portion of said bolt.

4,226,678

METHOD AND APPARATUS FOR THE DECONTAMINATION OF A LIQUID CONTAINING CONTAMINANTS

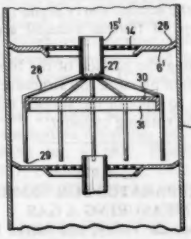
Hanns Mende, Bad Nauheim; Helmut Beuler, Gambach, and Rolf Glaum, Butzbach, all of Fed. Rep. of Germany, assignors to Luwa AG, Zürich, Switzerland

Filed Jun. 21, 1977, Ser. No. 808,626

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1976, 2629581

Int. Cl.[2] B01D 3/22

U.S. Cl. 202—161 5 Claims



1. In an apparatus for decontaminating a liquid by evaporation, including an evaporator having a heating means, inlet means for introducing the liquid to be decontaminated, outlet means for removing the concentrate; the apparatus further including a vertical column coupled to the evaporator and

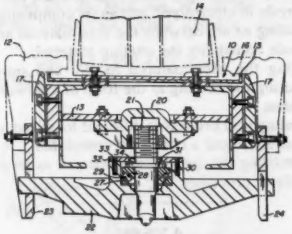
having a column wall, means defining, in an upper zone of the column, an inlet for introducing wash liquid and an outlet for removing the vapor generated in the evaporator; a plurality of horizontally oriented superposed plates arranged in a spaced relationship along the length of the column and connected tightly to the walls of the column; each plate having a wash liquid port arranged in a central zone of the respective plate; and a wash liquid distributing means arranged between each two plates and operatively connected to the wash liquid port associated with the plate located immediately above the respective wash liquid distributing means; the improvement wherein each plate has a first annular zone immediately surrounding said wash liquid port and containing vapor passages and a second annular zone immediately surrounding said first annular zone and being in circumferential contact with the column walls; said second annular zone being void of apertures; the improvement further comprising a horizontally oriented baffle plate arranged between each two plates and spaced therefrom, each said baffle plate fully overlapping the first annular zone of the plates situated immediately above and immediately below the respective baffle plate; each said baffle plate having a perimeter spaced from said column wall; and further wherein said wash liquid distributing means includes a plurality of tubes arranged in an array about the respective wash liquid port and being attached to the perimeter of the underlying baffle plate; each said tube having a first portion extending radially outwardly and downwardly from the respective wash liquid port to the perimeter of the underlying said baffle plate; each said tube further having a second portion extending vertically downwardly from said perimeter to a location close to and immediately above the second annular zone of the respective underlying plate and terminating by a vertically downwardly oriented discharge opening, whereby the wash liquid is discharged solely onto the second annular zone of each respective plate for radial inward flow on the first annular zone of the respective plate and further whereby the vapors passing vertically through the first annular zone of said plates impinge upon the overlying baffle plate and are deflected thereby to pass through an annular clearance defined by the column wall and the perimeter of the respective baffle plate to the first annular zone of the next overlying plate.

4,226,679

LATCH MECHANISM FOR COKE OVEN DOORS

Calvin E. Kelly, Murrysville, and Thomas E. Nicely, Delmont Borough, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 15, 1979, Ser. No. 12,268
Int. Cl.[2] C10B *25/12*
U.S. Cl. 202—248 **2 Claims**



1. In a coke oven which includes a door having a sealing strip extending around its perimeter, a jamb having a surface to be contacted by said strip, and at least one latch mechanism for holding said door in closed position against said jamb, said latch mechanism comprising:

a screw spindle threadedly engaging said door and projecting outwardly therefrom;

a latch bar pivoted to said spindle; and

a pair of latch hooks projecting outwardly from said jamb to be engaged by said bar but subject to being not perfectly in line;

the combination therewith of an improved mounting for said bar providing self-adjustability thereof in all directions relative to said spindle to correct for misalignment of said hooks;

said mounting comprising a combination radial-thrust bearing having outer and inner races and rollers between said races;

said bar having a bore in which said outer race is fixed;

said inner race being fixed to said spindle;

the axes of said rollers lying at angles of about 40° to 50° to the axis of said spindle; and

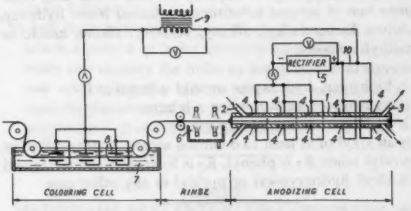
means retaining said bar on said spindle but forming a gap above said inner race to allow self-adjusting movement of said bar.

4,226,680

PROCESS FOR ELECTROLYTIC COLORATION OF ANODIZED ALUMINIUM

William E. Cooke, Kingston, and Robert A. Innes, Amherstview, both of Canada, assignors to Alcan Research and Development Limited, Montreal, Canada

Continuation of Ser. No. 550,741, Feb. 18, 1975, abandoned.
This application Jun. 6, 1977, Ser. No. 803,854
Int. Cl.[2] C25D *11/22*
U.S. Cl. 204—28 **25 Claims**



1. A method of producing a colored anodized aluminium strip which comprises drawing aluminium in strip form successively through an anodizing stage and an electrolytic coloring stage comprising in the anodizing stage moving the strip successively past one or more anodes immersed in a sulphuric acid anodizing electrolyte and past one or more cathodes and passing direct current between said cathodes and said anodes through the strip so as to render the strip initially cathodic and subsequently anodic to develop an anodic oxide film on the surface thereof, the thus anodized strip being then passed through, in said electrolytic coloring stage, an acidic electrolyte containing a material selected from a salt of at least one of copper, tin, cobalt, nickel, chromium, iron, silver or lead, or a manganate, tellurite or selenite, and passing alternating current between at least one electrode immersed in said acidic electrolyte and said anodized strip, the circuit for said alternating current being completed through an electrode immersed in the electrolyte of the direct current anodizing stage.

4,226,681

PROCESS FOR THE PRODUCTION OF A MAGNETIC RECORDING MEDIUM

Ryuji Shirahata, and Tatsuji Kitamoto, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 19, 1978, Ser. No. 916,540
Claims priority, application Japan, Jul. 12, 1977, 52/82503
Int. Cl.[3] C25D *5/00*
U.S. Cl. 204—38 ST **8 Claims**

1. A process for the production of a magnetic recording medium, which comprises heating a substrate or subbing layer

having a thickness of at least 500 A containing at least 95% copper at a temperature of about 100° to 350° C. and, at the same time, vapor depositing at a vapor deposition speed of 0.03 to 3 μm/min. in a vacuum of at most 10^{-4} Torr a ferromagnetic metal containing at least 70% by weight cobalt directly on the substrate or subbing layer to thus form a magnetic recording layer.

4,226,682

BRIGHTENERS FOR ELECTROLYTIC ACID ZINC BATHS

Francine Popescu, 27, rue du Centre, 94490 Ormesson, France

Filed Feb. 16, 1979, Ser. No. 13,189

Claims priority, application France, Feb. 17, 1978, 78 04508

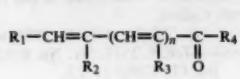
Int. Cl.[2] C25D *3/22*

U.S. Cl. 204—55 R **9 Claims**

1. A bright zinc electroplating bath comprising an aqueous acidic solution of zinc ions and:

(a) 0.1 to 30.0 grams per liter of a dispersing agent compatible with said bath; and,

(b) 0.05 to 2.0 grams per liter of a brightener of general formula:



(I)

wherein:

R_1 is a phenyl, pyridyl or naphthyl radical which may comprise one or several substituents selected from: hydroxy, chloro, bromo, alkyl, alkoxy, carboxy, amino, amido or methylenedioxy;

N is zero or 1

R_2 is hydrogen, hydroxy or methyl when n is 1;

R_2 is hydroxy or methyl when n is zero;

R_3 is hydrogen, hydroxy or methyl;

R_4 is an alkyl of at least two carbon atoms, hydroxyalkyl or pyridyl when R_1 is phenyl, R_2 is hydrogen and n=0; and R_4 is alkyl, hydroxyalkyl or pyridyl in any other case.

4,226,683

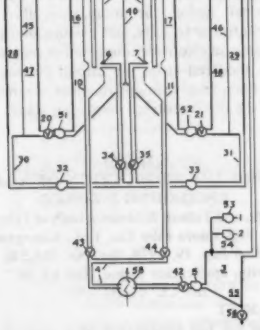
METHOD AND APPARATUS FOR HYDROGEN PRODUCTION IN AN ABSORBER LIQUID BY ELECTROCHEMICAL OF COAL AND WATER

Vesper A. Vaseen, 9840 W. 35th Ave., Wheatridge, Colo. 80033

Filed Aug. 9, 1979, Ser. No. 65,210

Int. Cl.[3] C25B *1/02, 1/00*

U.S. Cl. 204—101 **1 Claim**



1. I claim a combination of processes as a single process for use with coal or carbon dust and their particulates and their electro-chemical reaction with water for the express purpose of producing hydrogen; consisting of:

reducing coal or carbon to particles smaller than 500 micron or as small as practical,

blending the coal or carbon dust with water to produce a ten percent to eighty percent coal slurry (by weight),

introducing the coal (carbon) slurry to a slurry supply reservoir under superatmospheric pressure,

transferring the coal (carbon)/slurry through a heater or heat exchanger, increasing its temperature, then

passing the coal (carbon) slurry through electrolyte cell conductor tubes or retaining devices which both mixes the slurry and intermitantly passes a gaseous absorber liquid therein controlling the velocity of both liquids across the anode and across the cathode electrode, thus depolarizing the electrodes

in an electro-chemical cell which by nonmiscible physical and gravity separation keeps separated the coal (carbon) slurry from the absorber liquid, as well as free gases of CO_2 and H_2,

the carbon dioxide (CO_2) pregnant absorber liquid and frees CO_2 at the anode,

the hydrogen (H_2) pregnant absorber liquid, and frees H_2 at the cathode,

recycling the spent coal (carbon)/slurry from both the anode and cathode back to the coal (carbon)/water slurry reservoir,

at the same time removing the absorber liquid pregnant with CO_2 absorbed at the anode from the electrolysis system to the CO_2 stripper, and the absorber liquid pregnant with H_2 stripper, then

reducing the operating pressure within both the CO_2 and H_2 stripper causing effervescence and thus release of both CO_2 and H_2 respectively, and their individual recovery,

recycling the gases freed absorber liquid from both strippers back to the electrolytic cell "conductor" tubes,

recovering the CO_2 for use or disposal to atmosphere from both electrolytic cell at anode and CO_2 stripper,

recovering the H_2 for use from both electrolytic cell at cathode, and stripper.

4,226,684

ELECTRODE COATING METHOD

Emil Scherba, 3100 Teranimar Dr., Anaheim, Calif. 92804, assignor to Emil Stephen Scherba, Anaheim, Calif.

Filed Mar. 5, 1979, Ser. No. 17,715

Int. Cl.[3] C25C *1/00, 7/02;* **H01M** *4/88, 4/56*

U.S. Cl. 204—105 R **4 Claims**

1. A method of coating a metal base material and using same as an electrode in electrolytic processes comprising:

(1) Providing an arc between the base material and a hollow electrode containing the coating material;

(2) Melting the base material locally and simultaneously hammering the coating in the form of a powder on to the local area;

(3) Repeating said process at different localized areas on the base material until a coating is completed;

(4) and utilizing the coated base material as an electrode in electrolytic processes.

4,226,685

ELECTROLYTIC TREATMENT OF PLATING WASTES

Charles Portal, Newton, Mass., and Glenn M. Cook, Naperville, Ill., assignors to Kennecott Copper Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 32,256, Apr. 23, 1979, which is a continuation-in-part of Ser. No. 953,832, Oct. 23, 1978, abandoned. This application Jul. 5, 1979, Ser. No. 54,924

Int. Cl.[2] C25C *1/00;* **C02B** *1/82;* **C25C** *7/02*

U.S. Cl. 204—105 R **11 Claims**

1. In the method of reducing the concentration of a heavy

metal in an aqueous solution of plating wastes wherein the metal is precipitated electrolytically as it passes through a high surface area flow-through electrode, the improvement comprising:

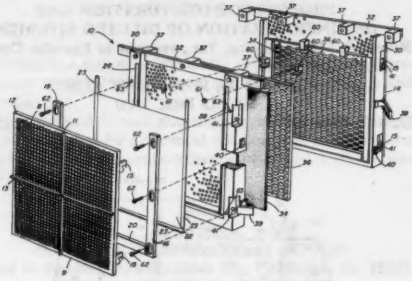
A. placing a stationary bed electrode in a tank, said electrode comprising

mating electrically nonconductive support frames;

a pair of perforated, electrically conductive, flow distributor plates attached to each frame and facing each other to form a cavity;

a pair of porous, bed supports adapted for attachment to said frame on the side of each distributor plate opposite the cavity creating a pair of basket-like compartments;

a porous, conductive bed in each of said compartments; and



a first quickly releasing means for holding said mated frame together;

B. feeding a solution of plating wastes to the cavity and through the distributor plates and beds while passing a current through the bed to plate a heavy metal therein and rejecting a solution reduced in heavy metal concentration from the tank;

C. releasing said first quickly releasing means to expose the bed;

D. removing the bed containing plated heavy metal from said compartment;

E. placing a fresh porous conductive bed in said compartment; and

F. repeating steps A through E.

4,226,686

METHOD OF FORMING A POROUS SHEET

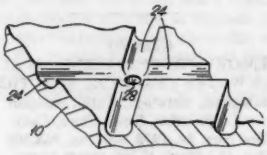
David Hustler, Burnley, England, assignor to Rolls-Royce Limited, London, England

Filed Jul. 25, 1979, Ser. No. 60,680

Claims priority, application United Kingdom, Aug. 5, 1978, 32391/78

Int. Cl.³ C25F *3/02, 3/14*

U.S. Cl. 204—129.55 **2 Claims**



1. A method of producing a perforate sheet comprising the steps of:

(a) covering a side of the sheet with a photo resist material and then exposing desired portions of the photo resist material to light so as to harden those portions so exposed;

(b) washing off the unhardened photo resist material to leave bared sheet portions in a first pattern;

(c) producing a plurality of holes by an electro chemical machining action on the bared sheet portions of the first pattern, the holes extending to a depth of approximately 50% of the sheet thickness so as to effectively reduce the thickness of the sheet locally, and the holes produced having a diameter less than the width of the grooves to be produced thereafter;

(d) covering the same side of the sheet with a photo resist material and then exposing other portions of the photo resist material to light so as to harden those portions so exposed;

(e) washing off the unhardened photo resist material to leave bared sheet portions in a second pattern;

(f) producing a plurality of intersecting grooves by an electro chemical machining action in the bared sheet portions of the second pattern, which grooves obviate the previously formed holes and leave local depressions formed in the groove bottoms at positions of the previously formed holes thereby further effectively reducing the sheet thickness locally;

(g) covering the remaining side of the sheet with a photo resist material and then exposing desired portions of the photo resist material to light so as to harden those portions so exposed;

(h) washing off the unhardened photo resist material on the other side of the sheet to produce bared sheet portions in a pattern identical with the pattern for the holes previously formed;

(i) and then producing by an electro chemical machining action a pattern of holes identical with the first pattern of holes and causing the holes to break into the depressions and continuing the electro chemical machining action until the diameters of the holes so produced in the groove bottoms are of required dimensions.

4,226,687

METHOD OF PREVENTING FINE CRACKS FROM OCCURING IN RUBBER OR PLASTIC INSULATION OF AN INSULATED WIRE OR CABLE EXPOSED TO ELECTRON BEAM IRRADIATION

Takashi Sasaki, Takasaki; Miyuki Hagiwara, Maebashi; Kunio Araki, Mito; Hayao Ishitani, Hiratsuka; Eisuke Saito, Kamakura, and Kyozi Komatsu, Yokosuka, all of Japan, assignors to The Furukawa Electric Co., Ltd. and Japan Atomic Energy Research Institute, both of Tokyo, Japan

Filed Sep. 22, 1978, Ser. No. 944,782

Claims priority, application Japan, Sep. 30, 1977, 52-117356

Int. Cl.² C08F *2/46, 8/00*

U.S. Cl. 204—159.13 **5 Claims**

1. A method of preventing fine cracks from occurring in the insulation of an elongated insulated wire or cable having a rubber or plastic insulation layer which has a maximum wall thickness of electron beam penetration of 4 mm or over and whose properties are improved by irradiation with an electron beam,

the method comprising:

longitudinally running the wire or cable under a scanner of an electron beam accelerator while rotating said wire or cable about the longitudinal axis thereof at such a speed as causes the same portion of the wire or cable to be irradiated with the electron beam of the electron beam accelerator at least twice during a period of less than 10 seconds; and

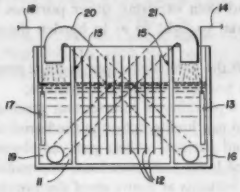
causing the electron beam accelerator to deliver on the insulation layer of the wire or cable an electron beam which is accelerated to an energy of 1 MeV or over and whose maximum penetration range in the said insulation layer is larger than its thickness.

4,226,688

ELECTRODIALYSIS DEVICE

Ora Kedem, and Tamar Robinson, both of Rehovot, Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

Filed Aug. 9, 1978, Ser. No. 932,408
Claims priority, application Israel, Aug. 16, 1977, 52758
Int. Cl.[2] B01D *13/02*
U.S. Cl. 204—180 P 16 Claims



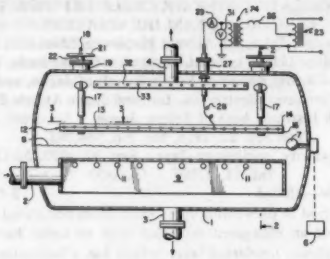
1. An electrodialysis device, comprising in combination:
an anode compartment;
a compartment containing a stack of electrodialysis membranes;
a cathode compartment, the volume of said cathode compartment being larger than the volume of said anode compartment;
conduits between said anode and cathode compartments; and
circulating means for circulating a slurry between said anode and said cathode compartments.

4,226,689

APPARATUS AND PROCESS FOR ELECTRICALLY RESOLVING EMULSIONS

Weldon D. Mayse, and Frederick D. Watson, both of Houston, Tex., assignors to Petrolite Corporation, St. Louis, Mo.

Filed May 29, 1979, Ser. No. 43,551
Int. Cl.[3] B03C *5/00*; C10G *33/02*
U.S. Cl. 204—188 15 Claims



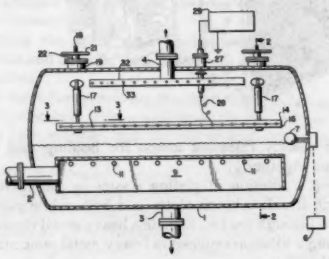
1. Apparatus for electrically resolving an emulsion having immiscible aqueous and organic liquid phases, the aqueous phase being internal, comprising:
(a) a metallic vessel having an emulsion inlet, an aqueous material outlet and organic material outlet means, said aqueous material outlet being at the bottom portion of said vessel and said organic material outlet means being in the upper portion of said vessel;
(b) distributor means positioned in the lower portion of said vessel above said aqueous material outlet and connected by conduit means to said emulsion inlet;
(c) planar, permeable electrode means adapted to be energized, horizontally positioned in said vessel spaced apart from the vessel walls and intermediate said distributor means and said organic material outlet means, said electrode means being the only electrode means positioned in said vessel;
(d) conductive means adapted to connect said electrode means with an electrical power source outside of said vessel;
(e) insulating means for maintaining said conductive means electrically isolated from said vessel; and
(f) means for controlling the level of aqueous material which collects in the bottom portion of said vessel, said means adapted to maintain the level of said aqueous material at a position intermediate said distributor means and said electrode means.

4,226,690

PROCESS FOR DEHYDRATION AND DEMINERALIZATION OF DILUTED BITUMEN

Robert B. Martin, Spring, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed May 29, 1979, Ser. No. 43,597
Int. Cl.[2] B03C *5/00*
U.S. Cl. 204—190 12 Claims



1. A process for electrically resolving a diluted bitumen emulsion having immiscible aqueous and organic liquid phases, said aqueous phase carrying undissolved mineral particles, comprising:
(a) establishing a unidirectional current electric field between an energized electrode and an aqueous material surface serving as an electrical ground;
(b) introducing said emulsion below the level of the aqueous material surface, and allowing said emulsion to rise to said surface;
(c) providing an emulsion treating gradient in the electric field of sufficient magnitude to cause coalescence of the aqueous material in said emulsion as soon as said emulsion breaks said aqueous material surface, whereby substantially all the emulsion is resolved at the aqueous material surface; and
(d) recovering aqueous and organic liquid materials resolved from said emulsion.

4,226,691

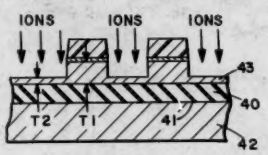
BUBBLE MEMORY PROCESS USING AN ALUMINUM PLUS WATER CHEMICAL REACTION

James A. Cunningham, Saratoga, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 24, 1978, Ser. No. 963,308
Int. Cl.[3] C23C *15/00*; H01F *10/02*
U.S. Cl. 204—192 E 8 Claims

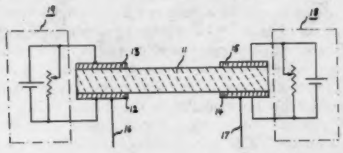
1. A method of fabricating magnetic bubble memory chips from a magnetic film havng a first insulating layer of SiO_2 on one surface thereof, said method including the steps of:
forming an aluminous layer of AlCu on said first insulating layer, said aluminous layer having a first substantially uniform thickness;

forming a layer of water insoluble material on said aluminous layer;
forming a photoresist mask on said layer of water insoluble material for forming patterned control conductors for said memory;
removing all regions of said water insoluble layer that are not covered by said mask;



thinning to a second substantially uniform thickness all regions of said aluminous layer that are not covered by said mask; and
converting said thinned aluminous regions to corresponding Al_2O_3 regions by a chemical reaction with water to form said patterned control conductors with said Al_2O_3 regions lying therebetween.

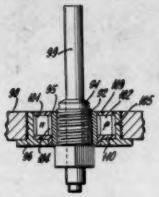
4,226,692
SOLID STATE COMBUSTION SENSOR
Arnold O. Isenberg, 327 Woodside Rd., Pittsburgh, Pa. 15221
Filed May 22, 1978, Ser. No. 908,243
Int. Cl.[3] F02D *33/00;* **G01N** *27/58*
U.S. Cl. 204—195 S **8 Claims**



1. A combustion sensing arrangement comprising: a conduit receiving the exhaust gases of a combustion process; a unitary solid state combustion sensor arranged in said conduit and consisting of a base member of an oxygen ion conductive material; and at least two electrodes disposed on said base member in intimate contact therewith and in spaced relationship so as to provide an ion conductive path between said electrodes through said base member, said base member and said electrodes being equally exposed to said exhaust gases and said sensor being arranged in said conduit with the associated electrodes spaced in the direction of flow such that the exhaust gas flowing through the conduit reaches first one and then the other of said associated electrodes and a transient gas front having different oxygen activities at opposite side thereof is momentarily disposed between said electrodes, said electrodes having leads for connection to an electrical signal processing circuit for supplying thereto signals generated by the sensor when a transient gas front moves past the sensor.

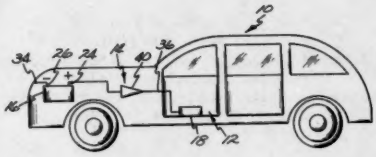
4,226,693
CORROSION PROBE COMBINATION
Jean P. Maes, Merelbeke, Belgium, assignor to s.a. Texaco Belgium n.v., Brussels, Belgium
Filed Dec. 29, 1978, Ser. No. 974,597
Int. Cl.[2] G01N *27/46*
U.S. Cl. 204—195 C **3 Claims**

1. The combination, comprising
a corrosion probe having a measuring element adapted for being subjected to corrosive conditions and a body for supporting said measuring element,
thermoelectric means comprising a plurality of n-type and p-type semiconductors arranged for a Peltier-effect and having one group of electrodes in thermal contact with said measuring element and another group of electrodes in thermal contact with said probe body,
thermal insulating means for separating said two groups of electrodes,
first circuit means having two connections for applying an emf to and receiving an emf from said electrodes,
a thermocouple for measuring the temperature of said measuring element,



a differential amplifier having two inputs and an output,
a potentiometer,
second circuit means for connecting the output of said potentiometer to one input of said amplifier,
third circuit means for connecting said thermocouple in series between the other input of said amplifier and one connection of said first circuit means, and
fourth circuit means for connecting the output of said amplifier to the other connection of said first circuit means,
all whereby the temperature of said probe measuring element may be regulated in accordance with said potentiometer setting.

4,226,694
CATHODIC PROTECTION SYSTEM FOR A MOTOR VEHICLE
Robert Baboian, Johnston, R.I.; Gardner S. Haynes, Attleboro, and Richard G. Delagi, Sharon, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 16, 1976, Ser. No. 714,444
Int. Cl.[3] C23F *13/00*
U.S. Cl. 204—196 **8 Claims**



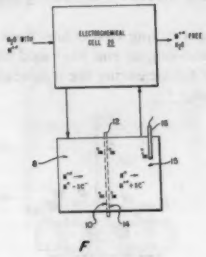
1. An improved impressed current cathodic protection system for a wheel mounted vehicle comprising a metallic body part of said vehicle, a corrosion resistant, electrically insulative coating covering said metallic body part, at least one anode member mounted in closely spaced, electrically insulated relation to said metallic body part extending over only a relatively small portion of said metallic body part and in a position to be electrolytically coupled to any portions of said metallic body part exposed through the coating by an electrolyte wetting said coating, and a D.C. voltage source having a positive pole electrically connected to said anode and a negative pole electrically connected to said metallic body part.

4,226,695

ELECTROCHEMICAL PROCESSING SYSTEM

Wayne R. Matson, Ayer, Mass., assignor to Environmental Sciences Associates, Inc., Bedford, Mass.

Filed Oct. 20, 1978, Ser. No. 953,335
Int. Cl.[3] C02C 5/12; C25C 1/00, 7/02
U.S. Cl. 204—231 19 Claims



F

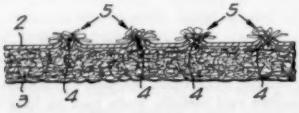
1. An electrochemical cell comprising:
a first compartment for containing a first solution;
a first counter electrode and a first reference electrode disposed in said first compartment for contacting said first solution;
a second compartment for containing a second solution;
a second counter electrode and a second reference electrode disposed in said second compartment for contacting said second solution;
a porous, bi-polar barrier electrode separating said first and said second compartments, and electrically connected to ground;
means for applying a potential on the first compartment side of said porous, bi-polar barrier electrode at a first value; and
means for applying a potential on the second compartment side of said porous bi-polar barrier electrode at a second value.

4,226,696

ELECTROLYSIS FOIL

Paul J. Vera, Galgenberg 52 App. 7, 9209 Serskamp, Belgium

Filed Jun. 1, 1979, Ser. No. 44,715
Claims priority, application Belgium, Jun. 2, 1978, 57029
Int. Cl.[3] C25D 17/14, 5/02, 9/06
U.S. Cl. 204—290 R 1 Claim



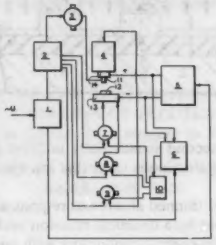
1. An electrolysis foil, comprising a sheet or foil of flexible aluminum with which is suitably bonded a layer of moister absorbing felt material, the whole surface of said sheet of flexible material being provided with a large number of small holes, the layer of moisture absorbing felt material being bonded with the foil of flexible metal by means of "needling" wherein some of said felt material extends through said holes.

4,226,697

APPARATUS FOR THE SPARK DEPOSITION OF METALS

Bogomil T. Antonov; Stoyan Y. Panayotov, and Ognyan V. Lyutakov, all of Sofia, Bulgaria, assignors to BRV "Electronna Obrabotka na Materialite", Sofia, Bulgaria

Filed Nov. 28, 1978, Ser. No. 964,255
Claims priority, application Bulgaria, Nov. 29, 1977, 37901
Int. Cl.[2] B23K 9/04
U.S. Cl. 204—298 1 Claim



1. In an apparatus for the electric spark deposition of metals upon a workpiece, the apparatus having a table movable in the x and y directions receiving the workpiece upon which the metal is to be deposited, and a rotatable depositing electrode-anode, the improvement which comprises a command unit to supply commands for the operation of the motors during motion or stopping of the apparatus, an impulse generator, first and second current supply units, a following system to determine any deviation in a predetermined distance between the electrode-anode and the workpiece a logic block to allow the switching on of each of the activating motors in response to a signal from the following system, means including a first electric motor for moving the depositing electrode-anode vertically, means including second and third electric motors for moving the table horizontally in the x- and y-directions, respectively, means including a fourth motor for rotating the electrode-anode, a first one of the outputs of the first current supply unit being connected to the command unit, a second output of the first current supply unit being connected to the impulse generator; the impulse generator having positive and negative outputs connected correspondingly to the second current supply unit and the moveable table of the apparatus and also to the following system; a second input of the following system being connected to one of the outputs of the command unit; the command unit having additional outputs connected to the first motor for producing the vertical motion of the depositing electrode-anode and the depositing head of the apparatus, the second motor for driving the table in the x-direction and the third motor for driving the table in the y-direction; the logic block selectively switching on each of the first, second, and third motors, said logic block having an input which is connected to the output of the following system; the second motor for the horizontal movement of the table in the x-direction, the third motor for the horizontal movement of the table in the y-direction, and the first motor for the vertical motion of the electrode-anode being additionally connected to respective ones of the outputs of the logic block.

4,226,698

ASH REMOVAL AND SYNTHESIS GAS GENERATION FROM HEAVY OILS PRODUCED BY COAL HYDROGENATION

Wilburn C. Schroeder, 7316 Radcliffe Dr., College Park, Md. 20740

Filed Aug. 4, 1978, Ser. No. 931,286
Int. Cl.[3] C10G 1/00
U.S. Cl. 208—8 R 7 Claims

1. A continuous process for the hydrogenation of coal, com-

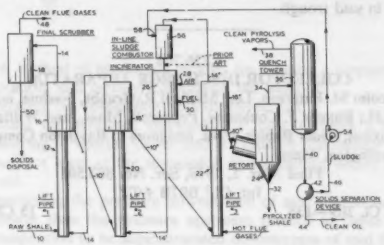
prising introducing particulate coal to a hydrogenation zone, reacting the coal in said zone under hydrogenation conditions with hydrogen-containing gases to produce an effluent containing a gaseous component, distillable oils, heavy oils and tars, unreacted coal, carbon and ash, separating said gaseous component and vacuum distilling light oils from a pumpable residue containing said heavy oils and tars, unreacted coal, carbon and ash, introducing at least a portion of said pumpable residue into a partial oxidation reactor operating at a temperature above about 2400° F. to generate hot gases containing hydrogen and carbon monoxide and convert the ash to molten form, introducing said hot gases from the partial oxidation reactor into the hydrogenation zone to provide at least a portion of the hydrogen requirement for the hydrogenation reaction, and removing molten ash from said oxidation reactor.

4,226,699

METHOD AND APPARATUS FOR CONSERVATION OF HEAT FROM SLUDGE PRODUCED BY A RETORT

John F. Nutter, Encino, Calif., assignor to Tosco Corporation, Los Angeles, Calif.

Filed Jul. 17, 1978, Ser. No. 925,468
Int. Cl.[2] C10B *49/02*; C10G *1/02*
U.S. Cl. 208—11 R **7 Claims**



1. In a process wherein hot flue gases containing oxygen are used for heating oil shale in a portion of the process not requiring the oxygen and wherein clean oil, waste particulate matter, and a sludge comprising particulate matter and burnable oil are produced, the method of maximizing the energy utilization and minimizing the waste disposal problems associated with the process comprising the steps of:

(a) forming a combustible mixture of the sludge and the flue gases prior to said heating portion of the process;

(b) combusting said combustible mixture prior to said heating portion of the process to consume the burnable oil and at least a portion of the oxygen of said mixture and to produce flue gases of increased temperature and lowered oxygen content and to produce particulate matter which can be disposed of with the other particulate matter from the process; and,

(c) using the increased temperature flue gases from step (b) in said heating portion of the process.

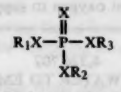
4,226,700

METHOD FOR INHIBITING FOULING OF PETROCHEMICAL PROCESSING EQUIPMENT

Henry T. Broom, Richmond, Tex., assignor to Nalco Chemical Company, Oakbrook, Ill.

Filed Aug. 14, 1978, Ser. No. 932,855
Int. Cl.[2] C10G *9/16*
U.S. Cl. 208—48 AA **1 Claim**

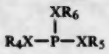
1. A method of inhibiting formation of a foulant on process equipment through which a stream of hot crude oil or naphtha is fed and comprising adding to the stream an effective amount of a mixture consisting essentially of (1) a thiodipropionate and, (2) either a dialkyl acid phosphate ester or dialkyl acid phosphite ester, said phosphate ester being characterized by the general formula



where:

X is sulfur or oxygen,

R_1, R_2, and R_3 are each individually selected from the group consisting of hydrogen and addition complexes of hydrogen with an amine, alkyl, aryl, alkaryl, cycloalkyl, alkenyl, and aralkyl provided that in any given such phosphate ester at least one and not more than two of each R_1, R_2 and R_3 are hydrogen or an addition complex of hydrogen with an amine; and said phosphite ester being characterized by the general formula



where:

X is sulfur or oxygen,

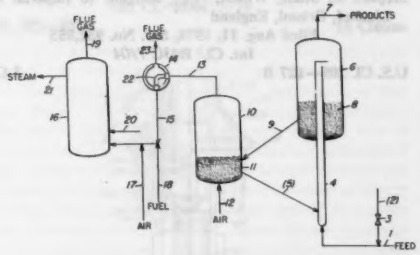
R_4, R_5, and R_6 are each independently selected from the group consisting of hydrogen and addition complexes of hydrogen with an amine, alkyl, aryl, alkaryl, cycloalkyl, alkenyl, and aralkyl, provided that in any given such phosphite ester at least one and not more than two of each R_4, R_5, and R_6 are each hydrogen or an addition complex of hydrogen with an amine.

4,226,701

TEMPORARY SHUTDOWN OF CO-COMBUSTION DEVICES

Richard G. Graven, Westmont, and Robert A. Sailor, Cinnaminson, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 832,140, Sep. 12, 1977, Pat. No. 4,146,464, which is a division of Ser. No. 703,862, Jul. 9, 1976, Pat. No. 4,064,047. This application Jan. 8, 1979, Ser. No. 1,648
The portion of the term of this patent subsequent to Dec. 20, 1994, has been disclaimed.
Int. Cl.[2] C10G *11/04*; B01J *8/24*
U.S. Cl. 208—121 **2 Claims**



1. A method for initiating the combustion of excess CO in the regenerator of a Fluid Catalytic Cracking Unit, said regenerator being operated with insufficient air flow rate to support said combustion, which method comprises:

building up the trace concentration of a metal combustion promoter selected from compounds of platinum, iridium, osmium, palladium, rhodium, ruthenium, or rhenium in the catalyst inventory of said unit to a level which is effective to induce the combustion of CO;

adjusting the temperature of the dense bed of the regenerator to a minimum of 1000° F.; and

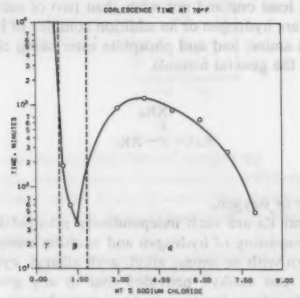
subsequently increasing the air flow rate to the regenerator to provide sufficient oxygen to support said combustion.

4,226,702

ADDITION OF WATER TO EMULSIONS TO ACCELERATE COALESCENCE

James E. Vinatieri, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 20, 1978, Ser. No. 926,478
Int. Cl.³ C10G *33/00, 33/04*
U.S. Cl. 208—188 **11 Claims**



1. A process comprising:

(a) forming a diluted system by adding to an opaque macroemulsion system made up of oil, a surfactant, water, and an electrolyte having a sodium chloride equivalent concentration in said opaque macroemulsion of at least 2 weight percent based on the weight of water; an amount of water such that the thus formed diluted system coalesces into a predominantly oil upper phase, a transparent microemulsion middle phase containing oil, surfactant, water and electrolyte and an aqueous lower phase;

(b) allowing said diluted system to so coalesce; and

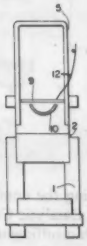
(c) recovering oil from said upper phase.

4,226,703

ELECTRO-STATIC TOBACCO SEPARATOR

Stephen E. Stout, Wilson, N.C., assignor to Imperial Group Limited, Bristol, England

Filed Aug. 11, 1978, Ser. No. 932,853
Int. Cl.² B03C *7/04*
U.S. Cl. 209—127 B **3 Claims**



1. A continuous electro-static separator for (a particulate material) separating lighter and heavier particulate material such as tobacco fines and sand comprising, in combination, a vibrating conveyor for receiving the particulate material at one end thereof, and for conveying particles material by vibratory motion, said conveyor forming a lower charged electrode;

a vibrating open mesh grid such as hardware cloth operatively connected to said vibrating conveyor, said vibrating grid forming an upper oppositely charged electrode which is spaced from and electrically isolated from said vibrating conveyor;

a trough of insulating material disposed adjacent the underside of said vibrating grid, said trough having a width substantially less than that of said vibrating grid, and said trough being operatively connected to said lower vibrating conveyor to convey by vibratory motion any particulate material located in said trough;

means for applying a voltage between said vibrating conveyor and said vibrating grid to provide a field for electrostatic separation;

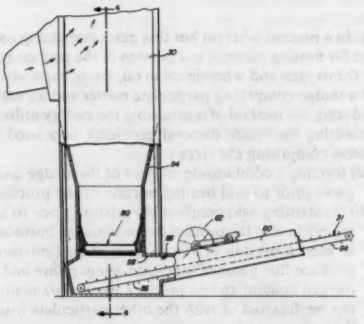
such that as said vibrating conveyor receives and conveys the particulate material, the particulate material picks up the charge of said vibrating conveyor causing the lighter particles of the particulate material to be attracted to said oppositely charged vibrating grid where the charge of the lighter particles is lost and whereby some of the lighter particles then fall back towards said vibrating conveyor and are collected in said trough and conveyed away while those lighter particles reaching said vibrating conveyor are again subject to being raised and ultimately collected in said trough.

4,226,704

COLLECTOR DISCHARGE APPARATUS

Malcolm M. Paterson, Lee; Michael R. Grubbs, Nashua, both of N.H.; Eugene J. Coulombe, Pepperell, Mass., and William J. Paxson, Cedar Rapids, Iowa, assignors to Raytheon Company, Lexington, Mass.

Filed Mar. 1, 1978, Ser. No. 882,501
Int. Cl.² B07B *4/02*
U.S. Cl. 209—138 **15 Claims**



1. A material handling system comprising a collector having side walls defining a collecting space, a discharge opening located at a midpoint in a lower portion of the collector, means for creating a stream of air flowing upwardly through the collector whereby the lower end of the collector in the area of the discharge opening is under negative air pressure, means for depositing material into the collector at a level above said discharge opening whereby at least a portion of the material will fall out of the air stream toward the discharge opening, discharge conveyor means for removing material falling through the discharge opening, said discharge conveyor means having a material-receiving portion located within the collector at a level below the level of the discharge opening and having a major portion extending exteriorly of the collector through an exit opening in a wall of the collector, and air seal means attached to wall portions of the collector adjacent the exit opening for restricting passage of substantial amounts of

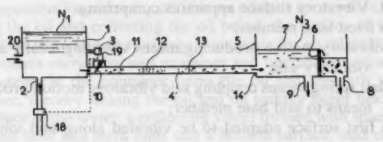
air through the exit opening, the air seal means including conduit means disposed longitudinally about the major portion of the conveyor means and having wall portions spaced therefrom for providing an exit passageway, and rotatable means having a plurality of angularly spaced portions disposed in the conduit means for sequentially engaging the conveyor means and the spaced wall portions of the conduit means for permitting passage of material and blocking a flow of air therebetween.

4,226,705

METHOD OF PRODUCING MICROBUBBLES FOR TREATING A SUSPENSION

Yves Lecoffre, Domene, France, assignor to Alsthom-Atlantique, Paris, France

Filed Jul. 7, 1978, Ser. No. 922,700
Claims priority, application France, Jul. 26, 1977, 77 22873
Int. Cl.[2] B03D 1/14
U.S. Cl. 209—164 **4 Claims**



1. A method of producing bubbles for treating a suspension by flotation, said method comprising the steps of:

saturating the suspension with dissolved gas,

causing the saturated suspension to flow through a pipe bearing a shutter valve into a flotation vat below the surface level of the suspension accumulating within said vat,

maintaining the pressure downstream of said shutter valve lower than the pressure upstream thereof to cause the suspension to be supersaturated downstream of said shutter valve,

rapidly interrupting the flow in the pipe by opening and closing said shutter valve at a predetermined frequency to produce, when the shutter valve is closed, in the downstream portion of the pipe, a periodic wave of low pressure such that cavitation bubbles are produced in the flow of said supersaturated suspension in said downstream portion,

said periodic wave during shutter valve closing propagating a low pressure wave in the pipe up to the flotation vat where it is reflected as a wave of high pressure which produces the collapse of the cavitation bubbles and forms micro-bubbles which become fixed to the particles to be floated and tend to be enlarged during flow up to the flotation vat with said particles.

4,226,706

DISPERSED AIR FLOTATION MACHINE

Vernon R. Degner, Carmichael, and William V. Colbert, Lodi, both of Calif., assignors to Envirotech Corporation, Menlo Park, Calif.

Continuation of Ser. No. 918,982, Jun. 26, 1978, abandoned, and a continuation-in-part of Ser. No. 791,102, Apr. 26, 1977, Pat. No. 4,110,210, which is a continuation of Ser. No. 583,072, Jun. 2, 1975, abandoned, said Ser. No. 918,982, is a continuation of Ser. No. 695,881, Jun. 14, 1976, abandoned. This application Aug. 9, 1979, Ser. No. 65,028
Int. Cl.[3] B03D 1/14
U.S. Cl. 209—170 **15 Claims**

1. A dispersed gas flotation machine wherein hydraulic effects are utilized to disperse gas bubbles throughout contained liquid comprising:

a. A housing and a plurality of flotation cells, mounted adjacent one another in a horizontal series in said housing and each of said cells containing a liquid body with a free surface;

b. means connected to said housing for introducing liquid for processing thereinto;

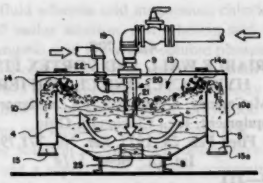
c. means for transferring liquid from cell to cell;

d. removal means for removing processed liquid from said housing;

e. means for removing froth from the free surface of the liquid in said housing;

f. a plurality of fluid ejection devices mounted one in each of said flotation cells in a position to expel a mixed fluid into the liquid contained in said cell, each said fluid ejection device including:

(i) a hollow tubular expansion chamber member which has



an open end through which the mixed fluid is ejected into the liquid in said cell and an opposite end;

(ii) a liquid-carrying pipe sealingly connected in communication with said opposite end of said expansion chamber member;

(iii) gas introduction means for introducing gas into the interior of said expansion chamber member for mixing with the liquid therein; and

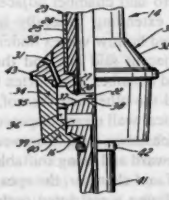
g. pump means connected to said removal means and to said liquid-carrying pipes to pump less than all of the processed liquid into said fluid ejection devices, whereby the processed liquid mixes with gas from said gas introduction means to form the mixed fluid which is ejected into the liquid body in each said cell of said plurality of cells to form a dispersion of gas bubbles in each said cell.

4,226,707

CENTRIFUGAL CLEANER

Joseph R. G. Boivin, Grand 'Mere, Canada, assignor to Consolidated-Bathurst Limited, Montreal, Canada

Filed Jun. 9, 1978, Ser. No. 914,034
Int. Cl.[2] B04C 5/14
U.S. Cl. 209—211 **14 Claims**



1. An apparatus for separating undesired particles from liquids and liquids and liquid suspensions, the apparatus comprising a chamber having a side wall disposed concentrically about a longitudinal axis, an inlet adjacent one end of said chamber for introducing a particle-laden fluid into said chamber and imparting a vortical flow thereto, a first discharge outlet in an end wall adjacent said first end, and a restricted outlet at the other end of said chamber, and a reject control and enclosure means concentric with and into which the re-

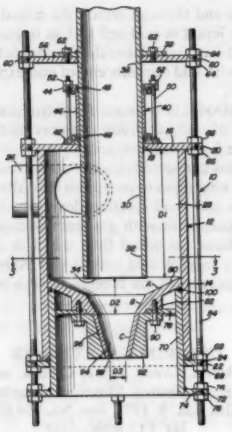
stricted outlet at the other end of said chamber opens, the entrance to said enclosure being formed by an annular slit-like passage for discharge of rejected material, an annular enclosure surrounding said slit, the internal bottom surface of said enclosure being formed by a relatively blunt upright conical abrasive surface having an inverted conical area therein, the height of said slit-like passage being defined by the extension of said restricted lower end towards said surface such that the size of rejected material passing through said slit is controlled and the material held at the opening of said passage, while orbiting around said opening, is worn by said abrasive surface to a size which will allow the same to pass through said slit.

4,226,708

VARIABLE WALL AND VORTEX FINDER HYDROCYCLONE CLASSIFIER

Walter T. McCartney, Uniontown, Pa., assignor to Coal Processing Equipment, Inc., Cincinnati, Ohio

Filed Feb. 24, 1977, Ser. No. 771,793
Int. Cl.³ B04C 5/14
U.S. Cl. 209—211 **7 Claims**



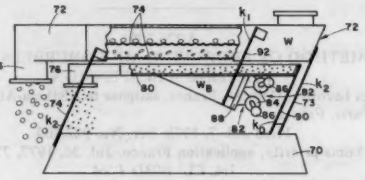
1. A cyclone classifier including a housing defining a generally cylindrical chamber, means for admitting fluid flow suspended materials into said chamber adjacent one end thereof and in a direction extending generally tangentially of said chamber, an elongated hollow vortex finder centrally disposed in said chamber adjacent said one end thereof and shiftable longitudinally of said chamber, said vortex finder opening into the chamber toward the other end thereof, inwardly opening generally frusto-conical wall means disposed in and closing the other end of said chamber, said frusto-conical wall means opening inwardly toward and being shiftable toward and away from said one end of said chamber, the apex of said wall means including means defining a restricted outlet, and adjustment means operatively connected between said frusto-conical wall means and said vortex finder and between the combination including said frusto-conical wall means and said vortex finder and said housing for adjustable relative shifting between said frusto-conical wall means and said vortex finder longitudinally of said chamber and adjustable relative shifting between said combination and said housing longitudinally of said chamber independent of relative shifting between said frusto-conical wall means and said vortex finder.

4,226,709

VIBRATING SURFACE APPARATUS

Jakhin B. Popper, Kyriat Motzkin, Israel, assignor to Popper Engineering Ltd., Kyriat Notzkin, Israel

Filed Jun. 5, 1978, Ser. No. 912,886
Int. Cl.³ B07B 1/42
U.S. Cl. 209—315 **6 Claims**



1. Vibratory surface apparatus comprising:
a fixed base member;
vibratory motion producing means vibrating axially along a vibratory axis;
first spring means coupling said vibratory motion producing means to said base member;
a first surface adapted to be vibrated along said vibratory axis;
second spring means drivingly coupling said first surface to said vibratory motion producing means, said second spring means having a finite spring constant along said vibratory axis thereby permitting substantial differential motion between said vibratory motion producing means and said first surface along said vibratory axis; and
third spring means coupling said first surface to said base member.

4,226,710

PROCESS FOR PURIFYING WATER CONTAINING FLUORIDE ION

Stanley Bruckenstein, Williamsville, N.Y., assignor to Andco Industries, Inc., Cheektowaga, N.Y.

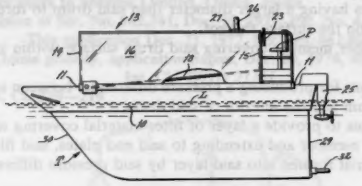
Continuation-in-part of Ser. No. 761,685, Jan. 24, 1977, Pat. No. 4,145,282. This application Feb. 12, 1979, Ser. No. 11,512
The portion of the term of this patent subsequent to Mar. 20, 1996, has been disclaimed.
Int. Cl.² C02B 1/20
U.S. Cl. 210—714 **25 Claims**

1. A continuous process for purifying water containing fluoride which comprises:
(a) continuously adding sufficient calcium composition to a stream of water to provide at least five moles of available calcium in said water for each mole of fluoride in said water;
(b) continuously adding sufficient phosphate composition to said stream; and
(c) making any adjustment in the pH of said water which is required to provide a desired pH in the water of from 6.0 to about 11.5; and
(d) causing said stream to pass through a bed of a particulate seeding composition selected from the group consisting of fluorapatite, calcium fluoride and mixtures thereof, the residence time of said stream through said bed being sufficient to permit a precipitate to form which contains essentially all fluoride which was present in the water.

4,226,711
OIL SPILL RECOVERY METHOD AND APPARATUS

Leno M. Meneghetti, No. 8 Arabian Trail, Springfield, Ill. 62702 and Huey A. Cain, 607 N. 8th, Carmi, Ill. 62821

Filed Jul. 14, 1978, Ser. No. 924,516
Int. Cl.[2] E02B *15/04*
U.S. Cl. 210—691 11 Claims

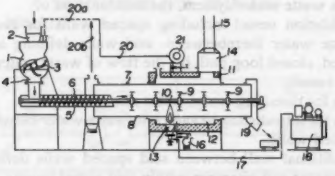


1. Apparatus for recovery of oil in an oil spill upon water by sinking the oil and collecting the oil below the surface of the water, said apparatus comprising: a container for an oil sinking agent, means carried by said container and operable to release the contents of the container upon the oil spill beneath the container, thereby sinking the oil and oil sinking agent below the surface of the water; a collecting vessel formed with spaced sides and bow and stern ends and a bottom surface, said collecting vessel being submerged with said bow and stern below the water surface and with said bottom in position to arrest the sinking oil and oil sinking agent and accumulate it at a depth below the water surface to be substantially isolated from the motion of the water at the surface; and means connecting said container and collecting vessel for cooperation in depositing the agent upon the oil spill and collecting the oil and oil sinking agent sinking below the surface of the water, said submerged collecting vessel permitting the oil spill to enter over said bow and water substantially free of oil to pass said collecting vessel by at least said stern end.

4,226,712
METHOD AND APPARATUS FOR TREATING WATER CONTAINING WASTES

Takeji Kamei, Fuji, Japan, assignor to Nihon Automatic Machinery Mfg. Co., Ltd.,, Japan

Filed Apr. 30, 1979, Ser. No. 35,201
Claims priority, application Japan, Apr. 29, 1978, 53-51195; Apr. 29, 1978, 53-51916
Int. Cl.[3] C02C *3/00*
U.S. Cl. 210—710 4 Claims



1. A method of treating water containing organic and/or inorganic waste comprising the steps of: mixing 100 parts by weight of the waste containing 50% to 99.8% by weight of water with 5 to 40 parts by weight of calcium oxide to produce an exothermic reaction mixture of the calcium oxide and the water contained by the waste; heating the reaction mixture using the heat from the exothermic reaction mixture to obtain a preliminarily dried mixture; transferring the preliminarily dried mixture to a drying kiln; further drying the preliminarily dried mixture and granulating it in the drying kiln by continuously agitating and heating the preliminarily dried mixture a temperature from about 800° C. to about 1,450° C. to yield a granulated product collecting stinking exhaust gases produced by said mixing of the waste with calcium oxide; channeling the exhaust gases to a furnace; and burning the exhaust gases in the furnace to produce substantially odorless gases.

4,226,713
DIAGNOSTIC AGENTS

Jack M. Goldberg, 4612 W. Elm Ter., Skokie, Ill. 60076

Filed Apr. 24, 1978, Ser. No. 899,597
Int. Cl.[2] C09K *3/00*; G01N *31/02, 31/06, 31/14, 33/16*
U.S. Cl. 23—230 B 5 Claims

2. A method of precipitating LDL and VLDL lipoproteins from a body fluid comprising:

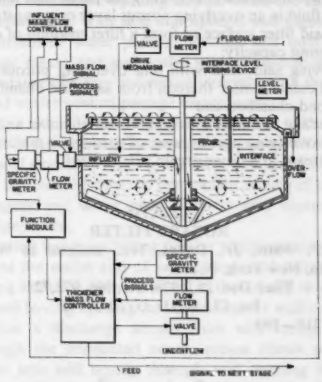
adding a single precipitating agent, made by the addition of magnesium chloride to neutralized phosphotungstic acid, to a body fluid wherein said magnesium chloride is colorless in 0.05 molar solution, and wherein said neutralized phosphotungstic acid is a water-soluble phosphotungstate to provide a concentration of said magnesium chloride of 0.025 to 0.075 millimoles per milliliter of body fluid and a concentration of phosphotungstate polyanion of 0.002 to 0.008 grams per milliliter of body fluid; and

clarifying the solution of the precipitating agent and body fluid to yield a supernatant solution containing HDL as substantially the only form of cholesterol to quantitatively determine the HDL.

4,226,714
THICKENER CONTROL SYSTEM

Kenneth M. Furness; Manuel Quinonez, and Stanley T. Low, all of Tucson, Ariz., assignors to The Anaconda Company, New York, N.Y.

Filed Dec. 27, 1978, Ser. No. 973,758
Int. Cl.[2] B01D *21/01, 21/06*
U.S. Cl. 210—723 17 Claims



1. A method for controlling a liquid-solid separation process in which an interface is formed so that substantially steady state operation is maintained comprising steps for:

(a) feeding a contaminated liquid-solid influent into a first separator;

(b) withdrawing a substantially clear liquid overflow and a substantially solid contaminant underflow therefrom;

(c) metering specific gravity and flow rate of the liquid-solid influent;

(d) adjusting mass flow rate in response to fluctuations in the metered parameters of step (c) to maintain a desired substantially constant mass flow rate of liquid-solid influent into the separator;

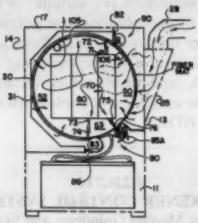
(e) metering specific gravity and flow rate of the substantially solid contaminant underflow;
(f) adjusting mass flow rate of the substantially solid-contaminant underflow according to the adjustment of step (d);
(g) monitoring an interface level between clear and unclear areas of the separator; and
(h) correcting the adjustment of step (f) according to fluctuations of the interface level.

4,226,715

APPARATUS AND METHOD FOR SEPARATING ENTRAINED PARTICULATE MATTER FROM A CONVEYING FLUID

Kurt W. Niederer, and Robert E. Terrell, both of Charlotte, N.C., assignors to The Terrell Machine Company, Charlotte, N.C.

Filed Sep. 24, 1979, Ser. No. 78,224
Int. Cl.[3] B01D *33/04, 33/06, 46/26*
U.S. Cl. 210—783 **29 Claims**



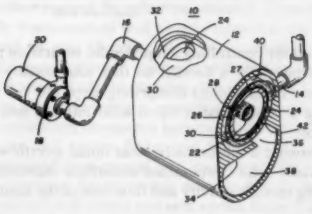
29. A method of separating entrained particulate matter from a conveying fluid, comprising the steps of:
a. directing the particulate-containing fluid into a first chamber and through a fluid permeable band having a filter surface thereon and collecting the particulate matter from the fluid in an overlying porous layer on an upstream side of said filter surface to form a filter medium of enhanced filtering capacity;
b. moving said band with said overlying porous layer of particulate matter thereon from said first chamber into a second chamber; and
c. directing said fluid into said second chamber and through said overlying porous layer of particulate matter from an upstream to a downstream side thereof.

4,226,716

ROTARY FILTER

Russell P. White, Jr., Dallas, Tex., assignor to Wesley G. McCain, New York, N.Y.

Filed Dec. 21, 1978, Ser. No. 971,721
Int. Cl.[2] B01D *33/10, 37/02*
U.S. Cl. 210—193 **7 Claims**



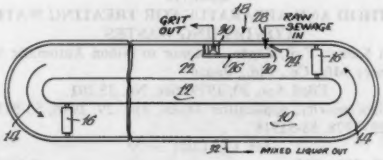
1. Apparatus for filtering a process fluid for removing particulate matter therefrom comprising in combination:
(a) a rotatable drum having a perforated surface and disposed in a housing to form a plenum between the drum surface and the interior of the housing,
(b) a tubular shaft supporting said drum, said shaft having fluid passages therethrough within said drum for removing said process fluid from within the interior of said drum,
(c) end plates joined to said drum at each end thereof, said plates having a larger diameter than said drum to form a bed on the surface thereof,
(d) a fiber member covering said drum surface within said bed,
(e) means for producing a pressure differential between said plenum and the interior of said drum,
(f) means to provide a layer of filter material covering said fiber member and extending to said end plates, said filter material formed into said layer by said pressure differential,
(g) means for introducing said process fluid into said plenum, said pressure differential forcing process fluid through said layer of filter material,
(h) a blade positioned against the surface of said layer of filter material, said blade extending along the length of said bed for stripping away said particulate matter collected on the surface of said filter layer as said drum rotates past said blade,
(i) an exhaust port, said stripped particulate matter being deposited adjacent said port for entrainment within process fluid exhausted through said port, and
(j) means to regulate the flow of said exhausted process fluid to remove said stripped particulate matter from said housing.

4,226,717

WASTE WATER TREATMENT

Arthur P. Malm, 1022 E. Devon Ave., Bartlett, Ill. 60103

Filed Nov. 8, 1978, Ser. No. 958,648
Int. Cl.[3] C02F *3/18*
U.S. Cl. 210—195.1 **8 Claims**



1. In a waste water system, the combination of:
an oxidation vessel including spaced walls for receipt of waste water therebetween, said walls defining an elongated, closed loop path for the flow of waste water within the vessel;
means for directing waste water along said path;
means for introducing oxygen into waste water between said spaced walls;
an additional wall between said spaced walls defining an elongated grit chamber within said vessel having an inlet and an outlet defined by the ends of said additional wall, said inlet and outlet being spaced from each other along and within said path, said grit chamber, remote from said inlet, being provided with means disposed below the intended level of waste water within said vessel for retaining grit within said chamber to prevent it from entering the remainder of said vessel while allowing organic material to pass from said outlet into said vessel remainder to be oxidized therein;
means for introducing raw waste water into said grit chamber near said inlet by introducing waste water between one of said spaced walls and said additional wall near the inlet end of the additional wall; and

a mixed liquor outlet in said vessel.

4,226,718

PROCESS FOR SEPARATING POLYVINYL ALCOHOL FROM ITS SOLUTION

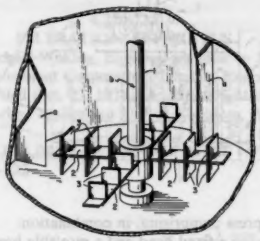
Totaro Yamagata, Suzuka, and Shuji Banno, Konan, Japan, assignors to Shikibo Limited, Osaka, Japan

Division of Ser. No. 642,341, Dec. 19, 1975, Pat. No. 4,078,129. This application Dec. 21, 1977, Ser. No. 862,854

Claims priority, application Japan, Dec. 20, 1974, 49/147125

Int. Cl.[2] B01D *21/01*

U.S. Cl. 210—219 **4 Claims**



4. Apparatus for coagulating particles of dissolved solids from an aqueous solution which comprises an upright stirring vessel provided with a stirrer comprising a substantially vertical rotatable shaft extending vertically into said vessel and having a plurality of flat arms mounted symmetrically thereon and extending radially outwardly from said shaft and having both flat surfaces of each blade substantially parallel to the plane of rotation of the blades, and a plurality of knives mounted on said arms and extending vertically upwardly and downwardly therefrom and rotatable about said shaft in a plane substantially parallel to the axis of rotation of said shaft, and having the flat surfaces of each knife oriented substantially tangent to cylindrical plane of rotation of the knife.

4,226,719

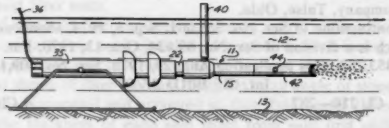
TREATING DEVICE FOR LARGE BODIES OF WATER

Robert B. Woltman, 44625 Tonapah St., Newberry Springs, Calif. 92365

Continuation of Ser. No. 771,882, Feb. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 694,847, Jun. 10, 1976, abandoned. This application Jul. 10, 1978, Ser. No. 923,463

Int. Cl.[2] C02B *3/08*; B01F *3/04*

U.S. Cl. 210—220 **3 Claims**



1. Treating means particularly adapted for dispersing a treating agent in a body of water comprising:

a casing for immersion in said body,

said casing having a water passage therethrough including:

an inlet for connection to a source of pressurized water,

an outlet of lesser cross-sectional area than said inlet,

inlet venturi passage means intermediate said inlet and said outlet, and

outlet venturi passage means downstream of said inlet venturi passage means,

said inlet venturi passage means having a restricted outlet opening and said outlet venturi passage means having a restricted inlet opening, the two restricted openings being of round shape and substantially equivalent diameters and being in alignment and axially separated,

said casing having structural means forming a water-tight mixing chamber including and surrounding the axial space between said restricted outlet opening and said restricted inlet opening and intake opening means into said mixing chamber adapted for communication with the atmosphere above said body of water, said intake opening means defining a passage of round cross-section extending radially into said casing and the restricted outlet opening of said inlet venturi passage means being positioned at a perpendicular plane through the axis of said casing coincident with the extended axis of the intake opening means passage,

said outlet venturi passage means comprising a first chamber of frusto-conical shape, a second chamber of frusto-conical shape diverging at a greater angle than said first chamber and a third chamber of cylindrical shape terminating in said outlet, said first chamber being the longest of the three chambers and said second chamber being the shortest of those chambers, said chambers being in communication so that water flowing through said outlet venturi passage means passes through the three chambers in their numbered sequence,

whereby the forcing of pressurized water into the inlet end of said casing when the latter is immersed in said body of water for use causes a stream of the water to pass through the restricted outlet opening of the inlet venturi passage means and into the restricted inlet opening of the outlet venturi passage means, then through said outlet venturi passage means in a turbulent condition as a result of the shape of the three chambers making up that passage, and

whereby when said water under pressure is being forced through said casing, air from the atmosphere is sucked through said intake opening means, when the latter is in communication with said atmosphere, and ingested into the stream of water passing between said inlet venturi passage means and said outlet venturi passage means in said mixing chamber and mixed violently with the stream in said outlet venturi passage means, and

whereby a chemical treating agent can be fed to the mixing chamber through said intake opening means for ingestion into said stream of water in the same manner in which the air is ingested thereinto so that violent mixing of the treating agent and water takes place in said venturi outlet passage means,

said treating means including tubular nozzle means connectible to the outlet end of said casing, said nozzle means having an inside diameter equal to that of said third chamber and having opening means through its wall positioned so that a discharge stream from said casing passing through the connected nozzle means draws additional water into said nozzle through said opening means to increase the density and turbulence of said stream and impart greater penetrating force to the stream as it passes through the discharge end of said nozzle means into said body of water,

the discharge end of said nozzle means being beveled from opposite sides to the middle to form a pair of points substantially equidistant from the opposite end of the nozzle means, the plane of the beveled configuration on one side being of a more acute angle relative to a plane through the axis of the nozzle means and said pair of points than the plane of the beveled configuration on the other side,

whereby a sweeping motion is imparted to the outlet stream from said connected nozzle means when said treating means is in operation.

4,226,720

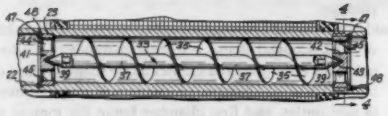
UNITARY PACKAGE FOR WATER TREATMENT FOR ATTACHMENT TO HOME HOT WATER HEATER

Miguel F. Brigante, 16550 NW. Tenth Ave., Miami, Fla. 33169

Continuation-in-part of Ser. No. 474,580, May 30, 1974, abandoned, Ser. No. 672,819, Apr. 1, 1976, and Ser. No. 855,951, Nov. 30, 1977, Pat. No. 4,151,090. This application Feb. 5, 1979, Ser. No. 9,669

Int. Cl.[3] C02F *1/48*

U.S. Cl. 210—222 4 Claims



1. A unitary special package for attachment to a home hot water heater between a municipal water line and the water inlet of the heater comprising:

a package casing having a top, a bottom and sides therebetween enclosing electrical conversion AC to DC apparatus and an electromagnetic assembly about a straight pipe section in the package for water treatment inside the casing;

an upper compartment immediately below the top of said casing in which is mounted a step down transformer converting 110-220 volts to 24 volts AC and a DC rectifier converting said 24 volts input into DC output for energizing an electromagnet coil in a lower compartment of the package;

a lower compartment containing a straight pipe section between the casing sides which projects from the sides and thus forms a straight line for direct communication between the municipal water line and the inlet line to the hot water heater;

an electromagnet coil extending along substantially the entire length of said pipe section between the casing sides;

said electromagnet coil being fed by 24 volts DC to thereby induce a DC magnetic field within the interior of said pipe section through which water flows;

a spider bearing fitting into said straight pipe section within said package in alignment with each of said sides, said spider bearing having a plurality of radially spaced arms to permit free flow of water therethrough, one of said spider bearings having a hub portion formed with a conically shaped recess having a graphite impregnated bearing surface;

an elongated solid helical impeller of ferromagnetic material having a first end shaft portion of conical shape fitting into the conically shaped recess of the spider bearing supported for rotation responsive to incoming municipal water flow; and

said helical impeller longitudinally traversing the entire length of said electromagnet coil and having a clearance tolerance between 1/16" and 1/128" between helical flights of the impeller and the inner diameter of the pipe section so that the helical impeller is adapted to rotate both at low flow velocity and at extremely high volume of water whereby said helical impeller will not whip under said conditions.

4,226,721

FILTER PRESS

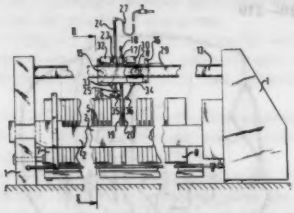
Hendrik B. Baas, Halsteren, Netherlands, assignor to B.V. Machinefabriek en Ijzergieterij Holland-, Bergen op Zoom, Netherlands

Filed Mar. 23, 1979, Ser. No. 23,187

Claims priority, application Netherlands, Mar. 31, 1978, 7803430

Int. Cl.[2] B01D *25/12, 25/38*

U.S. Cl. 210—225 9 Claims



1. A filter press comprising, in combination:

a frame having a fixed head and a movable head and means for moving said movable head toward and away from the fixed head respectively to clamp and to release a stack of filter plates disposed therebetween, and means for passing liquid to be filtered through said filter plates when the latter are clamped between the heads;

a carriage movable horizontally along said frame above the filter plates, coupling means mounted on said carriage for selectively engaging a filter plate when said movable head has been moved away from said fixed head to release said stack of filter plates, means for moving said carriage a predetermined distance after said coupling means has engaged a filter plate whereby to move such engaged plate to a position clear of other filter plates, and cleaning means mounted on said carriage for cleaning filter cake from said filter plate engaged by said coupling means, said coupling means and said cleaning means being mounted on said carriage at fixed locations thereon whereby the coupling means positively locates the engaged filter plate with respect to the carriage and the cleaning means and moves the engaged filter plate with the carriage to preserve such positive location when the carriage is moved to position the engaged filter plate at said position clear of other plates.

4,226,722

REMOVING OIL FROM WASTE WATER WITH SULFUR

Loyd W. Jones, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Continuation of Ser. No. 503,001, Sep. 3, 1974, abandoned, which is a division of Ser. No. 80,424, Oct. 13, 1970, Pat. No. 3,853,753. This application Aug. 29, 1975, Ser. No. 609,116

Int. Cl.[2] B01D *27/02*

U.S. Cl. 210—287 4 Claims

1. An oil-coalescing filter cartridge for removing oil from oily water comprising a cylinder with a longitudinal bore

therethrough, said cylinder being made of porous fibrous material supporting a solid phase yellow sulfur.

4,226,723

FILTRATION APPARATUS

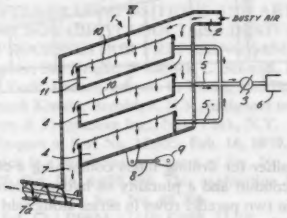
Derek B. Purchas, Woking, England, assignor to National Research Development Corporation, London, England

Filed Oct. 27, 1978, Ser. No. 955,243

Claims priority, application United Kingdom, Nov. 4, 1977, 45966/77

Int. Cl.[2] B01D *23/24, 29/04, 35/22, 46/04*

U.S. Cl. 210—332 9 Claims



1. Apparatus for filtering and separating a solid from a fluid comprising:

a chamber,

an inlet to said chamber for a solid-bearing fluid,

a solids outlet from said chamber for collected solids;

a plurality of filter units mounted and arranged within said chamber in parallel between said inlet and said solids outlet,

each such filter unit being a box-like structure comprising walls enclosing a hollow interior, at least one wall being formed by a sheet of filter medium and the remainder of said walls preventing access of said solid-bearing fluid to the interior of said structure,

each filter unit having an outlet communicating from the interior thereof for discharging the filtered fluid;

means for removing the filtered fluid from the interior of said filter units,

said sheets of filter medium presenting a first surface facing outward into said chamber, a second surface facing inward into said hollow interior,

said sheets of filter medium being set at an angle of slope to the horizontal and arranged so that fluid passes through the thickness of each said sheet from said first surface thereof to said second surface, leaving substantially all filtered solids retained on said first surface,

means to vibrate said filter units, the vibrations assisting to dislodge the retained solids from said first surfaces of said sheets of filter medium,

said sheets of filter medium being sloped such as to have one end adjacent said solids outlet, and

said plurality of filter units being arranged such as to define paths for sliding gravity travel of said dislodged solids towards said solids outlet whereby said solids travel by gravity while substantially avoiding solids rising appreciably into the atmosphere of said chamber.

4,226,724

TWO-STAGE PUSHER CENTRIFUGE

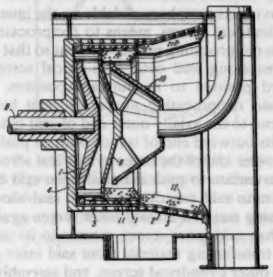
Fritz G. Stürmer, Mülheim, Fed. Rep. of Germany, assignor to Siebtechnik GmbH, Mülheim, Fed. Rep. of Germany

Continuation of Ser. No. 726,619, Sep. 27, 1976, abandoned. This application May 30, 1978, Ser. No. 910,367

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1975, 2542916

Int. Cl.[2] B01D *33/10*

U.S. Cl. 210—376 4 Claims



1. A two-stage pusher centrifuge for effectively dewatering and treating moist liquid material being centrifuged so as to provide a substantially drier material having a characteristic sliding friction angle which comprises an outer drum having a pusher bottom provided at the peripheral portion thereof including a first stage and a second stage with an extension comprising a cylindrical screen section collectively forming a short first stage having a length equalling from 30% to 40% of effective total drum length and a conical outwardly flaring screen section in the second stage practically confined to length of the pusher and the subsequent conically outwardly flaring section having an inclination at an entrance of the conical outwardly flaring section being less that said characteristic sliding friction angle of material in centrifugally moist condition being dewatered and treated along the conically outwardly flaring section, an axially displaceable cylindrical inner screen drum having a pusher end formation slidable on the cylindrical screen section of said outer drum, reciprocable means drivingly connected to said inner drum for reciprocating same, said inner screen drum and pusher end formation being dimensional to extend to the outer end of said cylindrical screen section of said outer drum on outward travel of said inner drum, and pusher bottom means inwardly of and fixed relative to said outer drum in axially spaced relationship to said bottom of said outer drum, including a disk formation extending outwardly with the screen section of said inner drum slidable on its periphery, a second disk formation spaced axially from said first disk formation with the peripheries of said disk formations spaced less than the length of the peripheral cylindrical screen section of said inner drum, a supply conduit leading to the space between said disk formations to supply material to be centrifuged to the said peripheral cylindrical screen section of said inner drum, the cylindrical section of said outer drum extending to the end of the travel of said peripheral screen section of said inner drum, said conical section of said outer drum extending axially and radially outwardly from said cylindrical section of the outer drum a distance greater than the length of the path of travel of said inner drum, so that said inner section moves material on said section of said outer drum onto and along said conical section, the movement along said conical section requiring less force to move the material thereon than for a cylindrical section of equal length, said conical section providing more efficient extraction of moist liquid material than a cylindrical section of less length and less mean diameter.

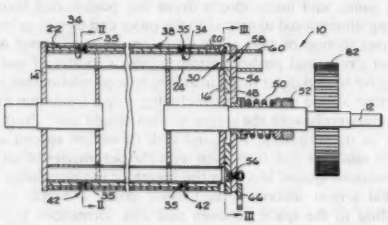
4. A two-stage pusher centrifuge having a rotating assembly

rotated by a rotating shaft for effectively dewatering and treating moist liquid material being centrifuged so as to provide a substantially drier material having a characteristic sliding friction angle which comprises a radially outer cylindrical screen formed with a conical screen extension flaring outwardly from the outer end of said outer cylindrical screen, a radially inner cylindrical screen within and coaxial with said outer cylindrical screen and of less length than said outer cylindrical screen, said inner cylindrical screen having its axially outer end formed as a reciprocating pusher element slidable on the inner surface of said outer cylindrical screen, a second pusher element fixed relative to said outer cylindrical screen and having its periphery slidable on the inner surface of said inner cylindrical screen, means to reciprocate said inner screen with its reciprocating pusher element so that said pusher element moves along said outer cylindrical screen from its axially inward position to its outward position, said inner screen and said reciprocating pusher element being dimensioned to extend to the axially outer end of said outer cylindrical screen at its outward end of travel, with its pusher element at the axially outer end of the outer cylindrical screen adjacent said conical extension to push material from said outer cylindrical screen onto said conical extension, said second pusher element retaining material on said inner screen against inward movement when said inner screen returns to its inward position, thereby transferring material from said inner cylindrical screen to said outer cylindrical screen, and assembly including means to deliver material to said inner cylindrical screen, the material on said conical screen extension having a longer dwell time therewith to effect more efficient certrifugal extraction of liquid before being moved off the outer end of said conical extension by outward movement of said inner pusher element to move material from said outer cylindrical screen to said conical screen extension, said rotating conical screen extension creating an outward component of force to assist in moving the material on said screen in an outward direction.

4,226,725
IMPROVEMENTS IN OR RELATING TO VACUUM BELT FILTERS

Theodor M. Stielau, Johannesburg, South Africa, assignor to Delkor Technik (Proprietary) Limited, South Africa

Continuation-in-part of Ser. No. 933,474, Aug. 14, 1978, Pat. No. 4,186,092. This application Jul. 16, 1979, Ser. No. 58,097
Int. Cl.[3] B01D *33/04*
U.S. Cl. 210—400 **10 Claims**

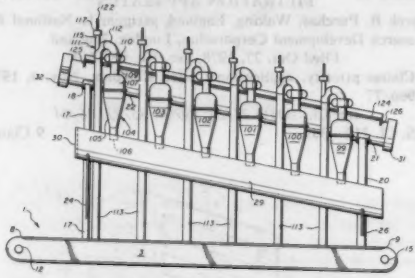


1. A horizontal vacuum belt filter which includes
an endless filter cloth on which a residue filter cake is, in use, formed;
a filter head roller;
a rotatable discharge roller located some distance forward of the head roller, a portion of the filter cloth passing over a segment of the cylindrical surface of the discharge roller and being in engagement therewith;
a plurality of longitudinally directed and circumferentially spaced apart passages in the discharge roller which are each in communication with a different segment of the cylindrical surface of the discharge roller via suitable bores;
a first valve means for directing a discharge liquid to those passages which are in communication, at any particular time, with that segment of the cylindrical surface of the discharge roller engaged by the filter cloth; and
a plurality of second valve means for permitting flow of discharge liquid only from those passages that are in communication with the said segment through the bores associated with those passages to the said segment.

4,226,726
DESILTER

William A. Rehm, Houston, Tex., assignor to Technical Systems Co., Houston, Tex.

Filed Mar. 5, 1979, Ser. No. 17,103
Int. Cl.[2] B04C *5/12*
U.S. Cl. 210—512 M **17 Claims**



1. A desilter for drilling muds comprising a common inlet manifold conduit and a plurality of hydrocyclone separators arranged in two parallel rows in series along said conduit and connected thereto,
each of said hydrocyclone separators comprising a hollow, enclosed vessel, having an upper, large casing portion with a tangential side inlet opening and conduit extending therefrom and an outlet conduit extending out through the upper wall thereof, and a lower casing portion tapering downwardly from said upper casing portion and defining a downwardly extending conical chamber having a bottom outlet for discharge of separated materials therefrom,
supporting means for said separators,
said inlet manifold conduit being supported on said supporting means and having a plurality of conduit means positioned serially thereon connecting the same to respective tangential inlet conduits on said separators,
at least one collection trough open to atmosphere at the top and positioned below said separators to receive the discharge of material from the bottom outlets therefrom, and
individual syphon conduits for each of said outlet conduits having outlet ends discharging separately to a collection point at atmospheric pressure.

4,226,727
PERSISTENT FIRE SUPPRESSANT COMPOSITION

William B. Tarpley, Jr., West Chester, Pa.; John R. Huzinec, Frostburg, Md., and Marion K. Freeman, West Chester, Pa., assignors to Energy & Minerals Research Co., Kennett Square, Pa.

Filed Jul. 21, 1978, Ser. No. 926,786
Int. Cl.[3] A62D *1/00*
U.S. Cl. 252—8 **10 Claims**

1. A nonaqueous persistent thixotropic fire suppressant composition comprising a fire suppressant agent, a carrier material, said suppressant agent permeating said carrier material to form a suppressant permeated carrier material, a fire extinguishing dispersant, said carrier material being insoluble in said dispersant, said permeated carrier material being suspended in said dispersant, and a gelling agent in an amount effective to thixo-

tropically gel said suspension of permeated carrier material and dispersant, said permeated carrier material being capable of adhering to an object in the vicinity of combustion.

4,226,728

FIRE EXTINGUISHER AND FIRE EXTINGUISHING COMPOSITION

Shin H. Kung, 28-34-200th St., Bayside, N.Y. 11360

Filed May 16, 1978, Ser. No. 906,409
Int. Cl.[2] A62D *1/00*
U.S. Cl. 252—8 **8 Claims**

1. An improved extinguishing compound for use in low pressure, aerosol fire extinguishers consisting of between about 10 and 90% of a low vapor pressure halogenated alkane selected from the group consisting of trichlorofluoromethane, dibromodifluoromethane, bormochlorodifluoromethane and 1,2-dibromotetrafluoroethane and between about 4 and 96% of a high vapor pressure halogenated alkane selected from the group consisting of, bromotrifluoromethane, and chloropentafluoroethane, all of said percentages being by weight of the extinguishing compound.

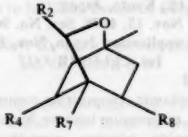
4,226,729

FABRIC SOFTENER COMPOSITIONS AND ARTICLES CONTAINING 2-OXABICYCLOOCTANE DERIVATIVES AND PROCESSES FOR PREPARING SAME

Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 12,695, Feb. 16, 1979, Pat. No. 4,195,100, which is a continuation-in-part of Ser. No. 953,128, Oct. 20, 1978, Pat. No. 4,195,099. This application Jun. 15, 1979, Ser. No. 48,706
Int. Cl.[3] D06M *13/18;* C09K *11/06*
U.S. Cl. 252—8.9 **9 Claims**

1. A process for augmenting or enhancing the aroma of a perfumed article selected from the group consisting of fabric softeners and optical brightener compositions comprising the step of adding to said fabric softener composition or optical brightener composition an aroma augmenting or enhancing quantity of a cyclic chemical compound having the structure:



wherein R_2 is C_2–C_5 alkyl or alkenyl; R_4 is hydrogen, methyl or ethyl, R_7 is hydrogen or methyl; and R_8 is hydrogen or methyl with the proviso that (i) when R_4 and R_8 are both hydrogen, R_7 is methyl; and (ii) when R_4 is methyl or ethyl, R_7 and R_8 are not both hydrogen.

4,226,730

SECONDARY RECOVERY METHOD UTILIZING THICKENED WATER

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

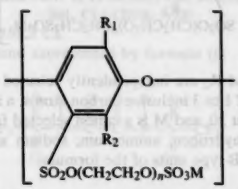
Filed Feb. 9, 1978, Ser. No. 876,390
Int. Cl.[2] C09K *3/00*
U.S. Cl. 252—8.55 D **9 Claims**

1. A method for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises:

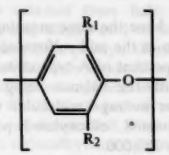
(a) injecting into the formation via an injection well a driving fluid comprising water having dissolved therein about 0.01 to about 2.0 weight percent of a water-soluble, sulfated, ethoxylated polyphenol,

(b) forcing the said fluid through the formation, and

(c) recovering hydrocarbons through the production well, wherein the said water-soluble, sulfated, ethoxylated polyphenol comprises recurring A-type units of the formula:



wherein R_1 and R_2 are independently selected straight chain alkyl groups of 1 to 3 inclusive carbon atoms, n is an integer of from 3 to about 30, and M is a cation selected from the group consisting of hydrogen, ammonium, sodium and potassium, and recurring B-type units of the formula:



wherein R_2 and R_2 have the same meaning as previously described, wherein in the said sulfated, ethoxylated polyphenol the weight percent of A-type units ranges from about 20 to about 60 with the balance being B-type units, and wherein the number average molecular weight of the said water-soluble, sulfated, ethoxylated polyphenol is from about 5000 to about 250,000.

4,226,731

SECONDARY RECOVERY PROCESS UTILIZING SULFONATED POLYPHENOLS

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

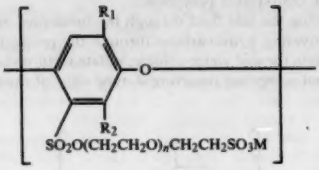
Filed Feb. 9, 1978, Ser. No. 876,391
Int. Cl.[2] C09K *3/00*
U.S. Cl. 252—8.55 D **9 Claims**

1. A process for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises:

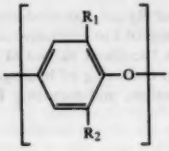
(a) injecting into the formation via an injection well a driving fluid comprising water having dissolved therein about 0.01 to about 2.0 weight percent of a water-soluble sulfonated. ethoxylated polyphenol,

(b) forcing the said fluid through the formation, and

(c) recovering hydrocarbons through the production well, wherein the said water-soluble, sulfonated, ethoxylated polyphenol comprises recurring A-type units of the formula:



wherein R_1 and R_2 are independently selected straight chain alkyl groups of 1 to 3 inclusive carbon atoms, n is an integer of from 3 to about 30, and M is a cation selected from the group consisting of hydrogen, ammonium, sodium and potassium, and recurring B-type units of the formula:



wherein R_1 and R_2 have the same meaning as previously described and wherein in the said sulfonated, ethoxylated polyphenol the weight percent of A-type units ranges from about 20 to about 60 with the balance being B-type units, and wherein the number average molecular weight of the said water-soluble, sulfonated, ethoxylated polyphenol is from about 5000 to about 250,000.

4,226,732

SYNTHETIC AIRCRAFT TURBINE OIL

Russell R. Reinhard, Hopewell Junction, and Roberta Yaffe, Beacon, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 30, 1978, Ser. No. 920,938
Int. Cl.[2] C10M *1/44*
U.S. Cl. 252—32.5 **16 Claims**

1. A synthetic lubricating oil consisting of a major portion of an aliphatic ester base oil having lubricating properties formed from the reaction of pentaerythritol or a polypentaerythritol or trimethylolpropane and an organic monocarboxylic acid having from about 2 to 18 carbon atoms per molecule containing:
   (a) from about 0.3 to 5 percent by weight of the lubricating oil composition of a phenylnaphthylamine or an alkyl or alkaryl phenyl napthylamine in which the alkyl radical has from 4 to 12 carbon atoms,
   (b) from about 0.3 to 5 percent by weight of a dialkyldiphenylamine in which the alkyl radical has from 4 to 12 carbon atoms,
   (c) from about 0.25 to 10 percent by weight of a hydrocarbyl phosphate ester in which said hydrocarbyl radical contains an aryl ring and contains from about 6 to 18 carbon atoms,
   (d) from about 0.01 to 0.5 percent by weight of a polyhydroxy-substituted anthraquinone,
   (e) from about 0.05 to 1.0 percent by weight of a t-alkylamine salt of 3-aminotriazole-dodecenyl-succinamic acid,
   (f) from about 0.005 to 0.50 percent by weight of 2-hydroxylpropyl-N,N-dibutyldithiocarbamate, and
   (g) from about 0.001 to 0.10 percent by weight of a tertiary alkylamine salt of methyl acid phosphate.

4,226,733

LUBRICANT COMPOSITIONS STABILIZED AGAINST ULTRA-VIOLET DEGRADATION

Eldon L. Armstrong, Mullica Hill, and Samuel J. Leonardi, Pitman, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 755,283, Dec. 29, 1976, which is a continuation-in-part of Ser. No. 604,977, Aug. 15, 1975, abandoned. This application Nov. 17, 1978, Ser. No. 961,792
Int. Cl.[2] C10M *1/54*
U.S. Cl. 252—42.7 **9 Claims**

1. A lubricant composition comprising a major amount of a mineral oil or a fraction thereof of lubricating viscosity and a minor amount effective for stabilizing said composition against ultra-violet degradation of an organo-nickel complex which is a suitable amine complex of a nickel alkylphenolate sulfide; said alkyl groups having from 1 to about 30 carbon atoms said amine selected from the group consisting of primary aliphatic amines, primary aromatic amines and cyclic secondary amines.

4,226,734

COOLING, LUBRICATING, AND CLEANING AGENT

Dietrich Schuster, 6741 Frankweiler/pflaz, Am Kaefernberg 7, Fed. Rep. of Germany

Filed Jun. 8, 1978, Ser. No. 913,848
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757322
Int. Cl.[3] C10M *1/06*
U.S. Cl. 252—49.3 **4 Claims**

1. A cooling, lubricating and cleaning agent, comprising the agent formed by the condensation reaction of an excess diethanolamine with boric acid, and the adding of lauryl (poly-1-oxapropene) oxaethane carboxylic acid, wherein the products used in forming said agent are in the following mutual molar relationship:
7 moles diethanolamine
3.3 moles boric acid
1 mole lauryl (poly-1-oxapropene) oxaethane carboxylic acid.

4,226,735

DIELECTRIC CERAMIC COMPOSITION AND PROCESS FOR ITS PRODUCTION CONTAINING $MgTiO_3$ AND Pb_3O_4 HAVING A QUANTITATIVE RELATIONSHIP

Yukio Sakabe, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Nov. 15, 1978, Ser. No. 961,043
Claims priority, application Japan, Nov. 15, 1977, 52-137492
Int. Cl.[2] H01B *3/12*
U.S. Cl. 252—63.2 **2 Claims**

1. A dielectric ceramic composition consisting essentially of strontium titanate, magnesium titanate, bismuth oxide, titanium oxide and lead oxide, wherein respective components are present in the following compositional proportion when the components are expressed by $SrTiO_3$, $MgTiO_3$, Bi_2O_3, TiO_2 and Pb_3O_4, respectively:

4,226,736

DISHWASHING DETERGENT GEL COMPOSITION

William G. Bush, and Valerie D. Braun, both of Cincinnati, Ohio, assignors to The Drackett Company, Cincinnati, Ohio

Continuation of Ser. No. 490,466, Jul. 22, 1974, abandoned. This application Jan. 2, 1979, Ser. No. 308
Int. Cl.[3] C11D *3/08, 17/00*
U.S. Cl. 252—135 **8 Claims**

1. A low-foaming machine dishwashing composition consisting essentially of:
   (a) from about 0.1 to 20 weight percent of an aqueous thickener;
   (b) from about 0.1 to 20 weight percent of a non-ionic surfactant; and
   (c) water,

said composition being in the form of a gel characterized as having a yield point of at least about 1170.

2. The composition as claimed in claim 1 additionally containing a builder.

3. The composition as claimed in claim 2 consisting essentially of from about 0.1 to 20 weight percent of an aqueous thickener; 0.1 to 20 weight percent of a non-ionic surfactant; 1 to 20 weight percent of a corrosion inhibitor; 1 to 70 weight percent of a builder; and the remaining portion constituting water.

4. The composition as claimed in claim 3 consisting essentially of from about 0.1 to 5 weight percent of sodium carboxymethylcellulose; 1 to 20 weight percent of sodium silicate; 0 to 40 weight percent of tetrasodium pyrophosphate; 1 to 30 weight percent of trisodium nitrilotriacetate monohydrate; 10 to 95 weight percent water; and a nonionic surfactant selected from the group consisting of:

(a) from about 0.1 to 10 weight percent of polypropoxylated-polyethoxylated ethylene glycol having an average molecular weight between about 2100 and 3100, that consists of, by weight, from about 20 to 40 weight percent polyoxyethylene, and a polyoxypropylene portion having a molecular weight between about 1700 and 2500;

(b) from about 0.1 to 10 weight percent of a compound having the general formula R-O(A)H wherein: R is an essentially linear alkyl group having from 10 to 18 carbon atoms, with the proviso that at least 70 weight percent of said compounds in said mixture have an R of from 12 to 16 carbon atoms, and A is a mixture of oxypropylene and oxyethylene groups, said oxypropylene and oxyethylene groups being from 55 percent to 80 percent of total weight of the compounds, the oxypropylene to oxyethylene ratio of said total weight being from 0.85:1 to 2.75:1; and

(c) mixtures thereof.

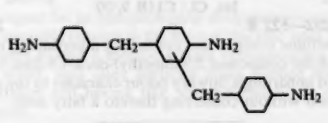
4,226,737

POLYCYCLOALIPHATIC POLYAMINES

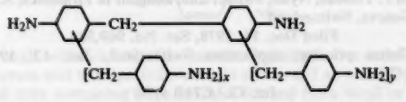
Edward W. Kluger, Pauline, and Tien K. Su, Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Nov. 10, 1977, Ser. No. 850,502
Int. Cl.[3] C09K *3/00*
U.S. Cl. 252—182 **3 Claims**

1. An epoxy curing agent comprising a mixture consisting essentially of from about 50 to about 75 weight percent of a polycycloaliphatic polyamine having the general structure



and from about 15 to about 30 weight percent of a polycycloaliphatic polyamine having the general structure



wherein x and y are integers of from 0 to about 2 and the sum of such integers, x+y, is 2.

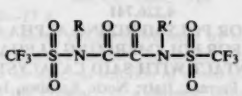
4,226,738

N,N-BIS(TRIFLUOROMETHYLSULFONYL)OXAMIDES AND CHEMILUMINESCENT COMPOSITIONS CONTAINING THE SAME

Michael M. Rauhut, Bridgewater; Shin-Shyong Tseng, Raritan, and Arthur G. Mohan, Somerville, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 1, 1978, Ser. No. 956,567
Int. Cl.[2] C09K *3/00*
U.S. Cl. 252—188.3 CL **19 Claims**

1. A compound represented by formula (I)



(I)

wherein R and R′ independently represent hydrogen; alkyl of 1 to 6 carbon atoms; cycloalkyl of 4 to 8 carbon atoms; substituted alkyl or cycloalkyl wherein the substituents are selected from halo, carboxy, alkoxy, or alkoxycarbonyl, wherein the alkoxy is of 1 to 6 carbon atoms; alkanoyl of 2 to 18 carbon atoms; aroyl of 7 to 11 carbon atoms; aralkyl of 7 to 11 carbon atoms; aryl of 6 to 10 carbon atoms; heterocyclic aryl of 3 to 9 carbon atoms; substituted aryl and heterocyclic aryl of 6 to 10 and 3 to 9 carbon atoms, respectively, wherein the substituents, one or more, are selected from halo, nitro, cyano, trifluoromethyl, alkyl and alkoxy of 1 to 6 carbon atoms, hydroxy, phenoxy, benzyloxy, phenyl, alkanoylamino of 2 to 6 carbon atoms, benzoylamino, alkylsulfonyl of 1 to 6 carbon atoms, carboxy, alkoxycarbonyl and alkoxysulfonyl wherein the alkoxy group has 1 to 6 carbon atoms, $—SO_3^{\ominus}M^{\oplus}$ wherein $M^{\oplus}$ is a cation selected from sodium, potassium, lithium, ammonium, monoalkylammonium, dialkylammonium, trialkylammonium, or tetraalkylammonium wherein the alkyl radicals have 1 to 6 carbon atoms, and may be the same or different, aminocarbonyl, and aminosulfonyl which are unsubstituted or substituted at the nitrogen by 1 or 2 radicals selected from alkyl of 1 to 6 carbon atoms, phenyl, or substituted phenyl wherein the substituents are as defined above for aryl and heterocyclic aryl.

4,226,739

MAGNESIUM-CONTAINING DISPERSIONS BY DECOMPOSITION OF $MGCO_3$

William J. Cheng, and David B. Guthrie, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Mar. 10, 1978, Ser. No. 885,150
Int. Cl.[2] C09K *3/00*; C10L *10/04*
U.S. Cl. 252—389 R **5 Claims**

1. A process of preparing a stable, fluid magnesium-containing dispersion which comprises thermally decomposing $MgCO_3$ to MgO in a process fluid which is stable and non-volatile and capable of being heated to the decomposition temperature of the magnesium carbonate in the fluid, and which contains a dispersant capable of retaining the magnesium oxide as it is formed by the thermal decomposition in stable suspension.

4,226,740

INFRA-RED RESPONSIVE FINGERPRINT COMPOSITION AND METHOD OF MAKING

Robert Worsham, Opa Locka, and Kurt L. Jenkins, Miami, both of Fla., assignors to Criminalistics, Inc., Miami, Fla.

Filed Feb. 9, 1979, Ser. No. 10,736
Int. Cl.[3] A61B *5/10*; C09K *3/00*
U.S. Cl. 252—408 **4 Claims**

1. A fingerprint composition for use under ordinary light and under infra-red consisting essentially of a mixture of the following finely divided powders:

aluminum in a particle range of 1 to 75 microns and a proportion of 6% to 20% by weight;

carbon black in a particle range of 5 to 70 millimicrons and a proportion of 30% to 48% by weight;
manganese dioxide in a particle range of 300 to 400 mesh and a proportion of 6% to 18% by weight;
milori blue in a particle range of 250 to 400 mesh and a proportion of 6% to 18% by weight;
mica in a particle range of 10 to 20 microns and a proportion of 6% to 18% by weight; and
gum arabic as a binder in a proportion of 2% to 9% by weight.

4,226,741

CATALYSTS FOR POLYMERIZING ALPHA-OLEFINS AND PROCESS FOR POLYMERIZING ALPHA-OLEFINS IN CONTACT WITH SAID CATALYSTS

Luciano Luciani, Ferrara, Italy; Norio Kashiwa, Iwakuni, Japan; Pier C. Barbe, Ferrara, Italy, and Akinori Toyota, Ohtake, Japan, assignors to Montedison S.p.A., Milan, Italy and Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 832,473, Sep. 12, 1977, abandoned, which is a continuation of Ser. No. 723,431, Sep. 14, 1976, abandoned. This application Aug. 17, 1978, Ser. No. 934,539
Claims priority, application Italy, Nov. 21, 1975, 29525 A/75
Int. Cl.[2] C08F *4/64*
U.S. Cl. 252—429 B **29 Claims**

1. Catalysts for the polymerization of alpha-olefins containing at least 3 carbon atoms and mixtures thereof with ethylene, comprising the product obtained by contacting the following starting components:
(a) a hydrocarbyl Al compound not containing halogen atoms directly bound to Al;
(b) a hydrocarbyl electron-donor capable of forming complexes or substitution reaction products with the Al compound (a) in such amount that 15% to 100% of the Al compound is combined with the electron-donor compound; and
(c) a solid component comprising, at least on the surface, the reaction product of a Mg dihalide with a halogenated teatrvalent Ti compound selected from the group consisting of Ti tetrahalides and Ti halogen alcoholates and with a hydrocarbyl electron-donor capable of forming complexes with Mg dihalides, the molar ratio electron-donor/Ti in said product being higher than 0.2 and the molar ratio halogen atoms/Ti being comprised between 10 and 90, component (c) being further characterized in that at least 80% by weight of the tetravalent Ti compounds contained therein is insoluble in boiling n-heptane and in that at least 50% by weight of the Ti compounds insoluble in n-heptane is insoluble in $TiCl_4$ at 80° C., and also in that the surface area of the product insoluble in $TiCl_4$ at 80° C., and the surface area of component (c) as such, is higher than 40 m^2/g.

4,226,742

CATALYST FOR THE HYDROCONVERSION OF HEAVY HYDROCARBONS

Roby Bearden, Jr., and Clyde L. Aldridge, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 847,898, Nov. 2, 1977, Pat. No. 4,134,825, which is a continuation-in-part of Ser. No. 702,227, Jul. 2, 1976, abandoned. This application Jul. 14, 1978, Ser. No. 924,818
Int. Cl.[2] B01J *31/12, 27/04*
U.S. Cl. 252—431 C **7 Claims**

1. A catalyst prepared by the steps which comprise:
(a) adding to a heavy hydrocarbon oil chargestock an oil-soluble metal compound in an amount ranging from about 10 to about 950 weight parts per million, calculated as the elemental metal, based on said oil chargestock, said metal being selected from the group consisting of Groups IVB, VB, VIB, VIIB, and VIII of the Periodic Table of Elements and mixtures thereof;
(b) converting said oil-soluble metal compound within said chargestock in the presence of a hydrogen-containing gas by heating said oil to produce a solid, non-colloidal catalyst within said chargestock, said catalyst comprising from about 10 to about 950 wppm of said metal, calculated as the elemental metal, based on said chargestock;
(c) reacting the chargestock containing said catalyst with hydrogen under hydroconversion conditions, including a temperature ranging from about 426° C. to about 482° C. in a hydroconversion zone to produce a hydroconversion zone effluent comprising a hydroconverted oil and catalytic solids;
(d) separating said catalytic solids from said hydroconversion zone effluent, and
(e) recovering the separated catalytic solids.

4,226,743

SILICA-ALUMINA HYDROGEL CATALYST

Mark A. Seese, Ellicott City; Edwin W. Albers, Annapolis, and John S. Magee, Jr., Ellicott City, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Mar. 12, 1979, Ser. No. 19,676
Int. Cl.[2] B01J *37/02, 29/04, 29/06*
U.S. Cl. 252—453 **8 Claims**

1. A process for preparing a silica-alumina hydrogel catalyst which comprises:
(a) reacting solutions of sodium silicate and acid aluminum salt at a pH of about 9.0 to 9.6 to obtain a silica-alumina cogel;
(b) reacting said silica-alumina cogel with sodium aluminate solution to obtain an alkaline gel slurry having a pH of about 11.8 to 12.3;
(c) reacting said gel slurry with an acid aluminum salt to obtain an acid gel slurry having a pH of below 4;
(d) reacting said acid gel slurry with a base to precipitate alumina and to obtain a silica-alumina hydrogel catalyst slurry having a pH of about 4.5 to 6;
(e) recovering the hydrogel from said slurry; and
(f) washing, forming and drying said hydrogel to obtain dense, attrition resistant catalyst particles.

6. A cracking catalyst prepared by way of the process of claim 1.

7. A catalyst of claim 6 which contains from about 10 to 30 percent by weight of a crystalline alumino-silicate zeolite, and 15 to 25 percent by weight clay.

4,226,744

5,9-DIMETHYL-DECA-4,9-DIEN-1-AL PERFUME COMPOSITIONS

Ferdinand Näf, Geneva, Switzerland, assignor to Firmenich, S.A., Geneva, Switzerland

Filed Nov. 6, 1978, Ser. No. 958,197
Claims priority, application Switzerland, Nov. 16, 1977, 13987/77
Int. Cl.[2] C11B *9/00*
U.S. Cl. 252—522 R **2 Claims**

1. A perfume composition containing a perfuming effective amount of the compound 5,9-dimethyl-deca-4,9-dien-1-al, said compound imparting a flowery odour character to the perfume composition without conferring thereto a fatty note.

4,226,745

CIS-10,10-DIMETHYL-TRICYCLO[7.1.1.0^{2,7}]UNDEC-2-EN-4-ONE AS PERFUMING INGREDIENT

Alan F. Thomas, Nyon, Switzerland, assignor to Firmenich, S.A., Geneva, Switzerland

Filed Dec. 14, 1978, Ser. No. 969,583
Claims priority, application Switzerland, Jan. 13, 1978, 360/78
Int. Cl.[2] C11B *9/00*
U.S. Cl. 252—522 R **2 Claims**

1. Method for improving, enhancing or modifying the organoleptic properties of a perfume composition which com-

prises adding thereto a perfuming effective amount of cis-10,10- dimethyl-tricyclo[7.1.1.0^{2,7}]undec-2-en-4-one.

4,226,746

GRAFT COPOLYMERS CONTAINING POLYOXAZOLINE AND POLYOXAZINE, AND THE PREPARATION THEREOF

Donald N. Schulz, Hartville, and Prakash D. Trivedi, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 796,911, May 16, 1977, Pat. No. 4,143,100. This application Nov. 7, 1978, Ser. No. 958,472

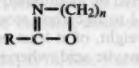
Int. Cl.^{3} C08G *73/00*

U.S. Cl. 260—3.3 21 Claims

1. A graft copolymer composition, comprising:

the reaction product of a backbone polymer having allylic chloride groups therein and monomers forming a pendant graft polymer,

said monomers having the formula



wherein R is an alkyl group having from 1 to 15 carbon atoms, a cycloalkyl group having from 4 to 15 carbon atoms, an aryl group having from 6 to 15 carbon atoms, combinations thereof, or hydrogen, and wherein n is 2 or 3,

the amount by weight of said pendant graft polymer ranging from about 0.5 percent to about 90 percent based upon the total weight of said graft copolymer,

said backbone polymer being unsaturated elastomers having allylic chloride groups therein,

said unsaturated elastomers selected from the class consisting of chlorinated polydienes having repeating units containing from 4 to 12 carbon atoms, chlorinated butyl rubber, chlorinated EPDM, chlorinated natural rubber, chlorinated styrene-butadiene rubber, and blends thereof, and

said graft polymer substituted for said chlorine atom of said allylic chloride group of said backbone polymer.

4,226,747

IMMUNOLOGICAL DIAGNOSTIC REAGENTS COMPRISING THIO-AMINE TERMINATED LATEX PARTICLES

Gaetano Roncari, Ettingen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

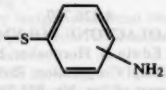
Filed Jul. 31, 1978, Ser. No. 929,410

Claims priority, application Switzerland, Aug. 3, 1977, 9542/77

Int. Cl.^{3} A61K *39/00*; C08L *25/00, 89/00*; G01N *31/00*

U.S. Cl. 260—8 20 Claims

1. A reagent for an immunological determination comprising a water insoluble reagent in the form of discrete latex particles, said reagent having a specific weight corresponding to about that of water, said latex particles being formed from vinyl polymerizates and having free terminal functional groups of the formula



through which is bound an immunologically active material, wherein said latex particles contain a core and an outer layer, said core containing polymerizates formed from vinyl or dienes monomers or mixtures thereof, with said polymerizates in said core carrying a functional group selected from the group consisting of carboxyl, sulfonate or mixtures thereof and said outer layer containing vinyl polymerizates carrying said terminal funtional groups.

4,226,748

FABRIC SIZING EMULSION

Kinjiro Matsunaga, Saitama; Shin-ichi Masuda, Ichikawa; Yunosuke Nakagawa, Soka, and Naotake Takaishi, Sakura, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Jan. 22, 1979, Ser. No. 4,999

Claims priority, application Japan, Jan. 27, 1978, 53-8053

Int. Cl.^{3} C08L *1/28*

U.S. Cl. 260—17 A 19 Claims

1. A fabric sizing emulsion prepared by emulsion polymerization of a reaction mixture consisting essentially of vinyl monomer in an aqueous solution of a non-ionic water-soluble polymer, in the presence of a cationic polymer, whereby to form a vinyl polymer from said vinyl monomer, said vinyl polymer having a cationic nitrogen content of from 0.004 to 0.2% by weight, based on said vinyl polymer.

4,226,749

SIZING COMPOSITION WITH CATIONIC AND ANIONIC COMPONENT

Georges Veaute, Paris, France, assignor to Manufacture de Produits Chimiques Protex S.A., Paris, France

Continuation-in-part of Ser. No. 908,767, May 23, 1978, abandoned. This application Jul. 10, 1978, Ser. No. 923,338

Claims priority, application France, May 23, 1977, 77 16628

Int. Cl.^{3} C08L *3/02*

U.S. Cl. 260—17.3 2 Claims

1. A composition for coating paper consisting essentially of about 100 parts of Kaolin pigment, about 0.8 parts of a copolymer of ethylacrylate, methacrylic acid, vinyl trimethoxy silane and triallyl phosphate; about 0.75 parts of a polyethyleneimine of molecular weight of 4000 to 6000; about 4.45 parts of a styrene-butadiene binder; about 0.73 parts of aluminum stearate; and an effective amount of a sizing compound.

4,226,750

PROCESS FOR PREPARING MODIFIED PLASTIC MATERIALS

Miklos Dimitrov; Franciska K. Keleman nee Gulyas; Richard Marko; Tamas Pazonyi; Bela Pukanszky, and Andras Riczko, all of Budapest, Hungary, assignors to Muanyagipari Kutato Intezet, Budapest, Hungary

Filed Jun. 13, 1978, Ser. No. 915,292

Claims priority, application Hungary, Jun. 15, 1977, MU 588

Int. Cl.^{2} C08K *5/00, 5/01, 5/09*

U.S. Cl. 260—23 H 6 Claims

1. A process for the modification of a plastics material which comprises forming a homogeneous mixture from one or more modifying plastics polymers and a substance which does not dissolve the modifying polymer(s) at ambient temperature or a mixture thereof with a solvent, at a temperature of at least 180° C., cooling the mixture to below 120° C. whereby a porodin gel is obtained and mixing said porodin gel, at a temperature below 120° C., with the plastics material to be modified in an amount of from 1 to 50% by weight based on the modified plastics material.

4,226,751

FIBERS OF IONIC THERMOPLASTIC POLYMERS

Robert D. Lundberg, Bridgewater, and Henry S. Makowski, Scotch Plains, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 855,550, Nov. 29, 1977, Pat. No. 4,172,820. This application Feb. 14, 1979, Ser. No. 12,118

Int. Cl.^{2} C08L *91/06*

U.S. Cl. 260—23.5 A 15 Claims

1. A composition for forming a neutralized sulfonated thermoplastic fiber, which comprises:

(a) a backbone solvent selected from the group consisting of aromatic, aliphatic or cycloaliphatic type solvent, and

(ii) a polar solvent having a polar function selected from the group consisting of alcohol, ester, acid and amine groups, said polar solvent interacting primarily with the neutralized sulfonate groups of said neutralized sulfonated thermoplastic, said polar solvent being miscible with said backbone solvent, said solvent system comprising about 60 to about 98 wt.% of said backbone solvent; and

(b) a neutralized sulfonated thermoplastic polymer dissolved in said solvent system at a concentration level of about 5 to about 50 grams per 100 ml of said solvent system to form a solution, said solution having a Brookfiled viscosity at room temperature of about 1,000 to about 20,000 cps, said neutralizing sulfonated thermoplastic polymer being derived from the group consisting of polyolefinic and polyvinyl aromatic resins and derivatives thereof.

4,226,752

EMULSION PROCESS FOR POLYMER PARTICLES

James R. Erickson, Brunswick, and Robert J. Seidewand, Olmsted Falls, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 837,390, Sep. 28, 1977, abandoned. This application Mar. 28, 1979, Ser. No. 24,878

Int. Cl.[2] **C08L** *31/04, 33/08, 25/04;* **C08F** *2/26, 2/30*

U.S. Cl. 260—29.6 RB **10 Claims**

1. An improved emulsion polymerization process for producing large particle size emulsion polymer particles wherein the improvement comprises:

providing substantially monodispersed polymer seed particles between 500 Å and 8,000 Å and having a Dw/Dn of between about 1.0 and 1.1 wherein Dw is the particle weight average diameter and Dn is the particle number average diameter, said polymer seed particles being a homopolymer or copolymer containing a polymerized monomer selected from styrene, acrylate, or methacrylate;

increasing the size of said polymer seed particles by polymerizing ethylenically unsaturated second stage monomers selected from styrene, alkyl acrylates, alkyl methacrylates, vinyl acetate, acrylic acid, and methacrylic acid onto said polymer seed particles in the presence of surfactants consisting essentially of non-ionic and anionic surfactants comprising by weight between about 30% and 98% non-ionic surfactant, said surfactant being present in the second stage processing sufficient to provide between about 105% and 1000% of theoretical polymer seed coverage to produce polymer particles containing by weight between about 5% and 95% polymerized second stage monomers.

4,226,753

NOVEL METHACRYLIC POLYMERS HAVING CONDENSATION-CROSSLINKABLE FUNCTIONALITY

Sheldon N. Lewis, Willow Grove, and Richard A. Haggard, Fort Washington, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 517,337, Oct. 23, 1974, Pat. No. 4,103,093, which is a continuation-in-part of Ser. No. 371,921, Jun. 20, 1973, abandoned, which is a continuation-in-part of Ser. No. 137,057, Apr. 23, 1971, abandoned. This application May 15, 1978, Ser. No. 905,812

Int. Cl.[2] **C08K** *5/01;* **C08L** *23/00*

U.S. Cl. 260—29.6 **10 Claims**

1. A coating composition comprising an anionically-polymerized addition polymer of at least one ester of methacrylic acid, the polymer comprising mers having condensation-crosslinkable functionality, wherein the average chain length of the polymer, $\overline{n}$, is about 6 to about 50 mers and about 1 to about 50% by weight of water or an organic solvent, and optionally comprising a pigment.

4,226,754

SYNTHETIC POLYMER

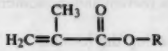
Han B. Yun, Princeton Junction, and Alfred J. Whitton, Hightstown, both of N.J., assignors to NL Industries, Inc., New York, N.Y.

Filed Jun. 8, 1978, Ser. No. 913,898

Int. Cl.[3] **C09D** *3/74, 3/80, 5/02;* **C08F** *220/06*

U.S. Cl. 260—29.6 TA **23 Claims**

1. A polymer of (a) from about 15 to about 35% by weight, of methacrylic acid, (b) from about 5 to about 70% by weight, of at least one ester of methacrylic acid represented by the structural formula:



wherein R is saturated or unsaturated and represents an alkyl group having from 1 to 20 carbon atoms, and (c) from about 5 to about 80% by weight, of at least one vinyl ester of a saturated aliphatic carboxylic acid, wherein the acid has from 1 to 10 carbon atoms.

4,226,755

TRIMELLITIC ACID ESTER AND ITS USE IN A PROTECTIVE LACQUER BASED ON EPOXIDE RESIN

Eduard Knecht, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 13, 1978, Ser. No. 968,898

Claims priority, application Switzerland, Dec. 23, 1977, 15959/77

Int. Cl.[2] **C08G** *59/42*

U.S. Cl. 260—31.4 EP **8 Claims**

1. A lacquer which contains: (1) an epoxide resin; (2) a trimellitic anhydride ester mixture which is obtained by heating trimellitic anhydride with at least one diol, in a molar ratio of 2:1.25, for at least 4 hours at 190°–250° C., at an external pressure of 5–30 torr for at least part of this time and in the absence of catalyst; and (3) a solvent.

4,226,756

MIXTURES OF EXTENDERS AND POLYOLS OR POLYMER/POLYOLS USEFUL IN POLYURETHANE PRODUCTION

Frank E. Critchfield, South Charleston; Richard M. Gerkin, Charleston, and Leslie E. Hawker, South Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 703,022, Jul., 1976, Pat. No. 4,125,505. This application Aug. 10, 1978, Ser. No. 932,638

Int. Cl.[3] **C08K** *5/06*

U.S. Cl. 260—33.2 R **2 Claims**

1. A polyol-chain extender mixture consisting of (1) a poly-(oxypropylene-oxyethylene)polyol having a hydroxyl number of from about 20 to 60, an oxyethylene cap of from about 10 to 30 weight percent and an internal oxyethylene content of from about 30 to 60 weight percent and (2) ethylene glycol.

4,226,757

POLYPIVALOLACTONE POLYMER BLENDS

Jesse D. Jones, and Edwin D. Hornbaker, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 951,780, Oct. 16, 1978, abandoned. This application Jul. 17, 1979, Ser. No. 58,156

Int. Cl.[2] **C08K** *3/10;* **C08L** *67/00*

U.S. Cl. 260—37 R **8 Claims**

1. A moldable thermoplastic resin composition comprising an intimate mechanical blend of a first polypivalolactone resin having an LVN of from about 1.3 to about 2.5 as measured in

benzyl alcohol at 150° C., and from about 5 to about 50 phr (based on the weight of said first resin) of a second polypivalolactone resin having an LVN of less than about 1.2 as measured in benzyl alcohol at 150° C.

4,226,758

FRICTION MATERIAL

Arthur Sumira, Manchester, England, assignor to Gandy Frictions Limited, Merseyside, England

Filed Feb. 23, 1978, Ser. No. 880,811
Claims priority, application United Kingdom, Feb. 23, 1977, 7563/77
Int. Cl.[2] C08K 7/26
U.S. Cl. 260—38 3 Claims

1. A friction material wherein the asbestos fibres are substantially completely replaced by blown alumino-silicate ceramic fibres made from the mineral kaolin, said alumino-silicate fibres being substantially free of water glass.

4,226,759

FRICTION MATERIALS

John Chester, Stockport, England, assignor to Ferodo Limited, Manchester, England

Filed Jul. 31, 1978, Ser. No. 929,533
Claims priority, application United Kingdom, Aug. 10, 1977, 33485/77
Int. Cl.[2] C08K 3/08
U.S. Cl. 260—38 11 Claims

1. A friction material composition suitable for moulded friction pads consisting essentially of a thermosetting binder, a fibrous reinforcement including additional fillers and additives, wherein:

(a) the thermosetting binder comprises a phenol formaldehyde resin and a heat and chemical resistant rubber which binder constitutes from 20% to 45% by volume of the friction material composition of which at least half of said binder is said resin;

(b) the fibrous reinforcement consists solely of short lengths of steel fiber in an amount between 5% and 15% by volume of the composition;

(c) at least 10% by volume of the composition is an inert mineral filler; and

(d) the balance of the composition consists substantially entirely of inorganic friction and wear modifiers in an amount up to 40% by volume.

4,226,760

COLORED RIGID THERMOPLASTIC RESIN COMPOSITIONS AND A PROCESS FOR THEIR PRODUCTION

Martin L. Feldman, East Brunswick, and James T. DeGroff, Oldwick, both of N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed May 9, 1979, Ser. No. 37,542
Int. Cl.[2] C08K 9/04
U.S. Cl. 260—42.14 20 Claims

1. The process for coloring a rigid thermoplastic resin composition that comprises incorporating in said composition an amount of a non-plasticizing liquid pigment dispersion that will provide at least 0.1% by weight of pigment, based on the weight of the composition, said non-plasticizing liquid pigment dispersion containing

(a) 5% to 80% by weight of at least one pigment and

(b) 20% to 95% by weight of an unsaturated polyester vehicle that comprises

(1) 50% to 100% by weight of an unsaturated polyester that is the product of the reaction of a dicarboxylic acid component containing 80 to 90 mole percent of at least one unsaturated aliphatic dicarboxylic acid having 4 to 8 carbon atoms and 10 to 20 mole percent of at least one saturated aromatic dicarboxylic acid with an alcohol component containing 40 to 60 mole percent of a glycol having 2 to 6 carbon atoms and 40 to 60 mole percent of a monohydric alcohol having 6 to 12 carbon atoms, in the amount of 0.4 mole to 0.6 mole of the dicarboxylic acid component per mole of the alcohol component, and

(2) 0 to 50% by weight of an unsaturated monomer capable of reacting with said unsaturated polyester to form cross-linkages.

4,226,761

POLYPHENYLENE ETHER RESIN COMPOSITIONS CONTAINING POLYSILOXANE-MODIFIED ALKENYL AROMATIC RESINS

Glenn D. Cooper, Delmar; William R. Haaf, Voorheesville, and Howard A. Vaughn, Jr., Schenectady, all of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 27, 1978, Ser. No. 963,800
Int. Cl.[3] C08L 71/04
U.S. Cl. 260—42.18 23 Claims

1. A thermoplastic molding composition which, after molding, has good impact resistance, said composition comprising:

(a) a polyphenylene ether resin; and

(b) an alkenyl aromatic resin that is modified with a polysiloxane in the form of small rubber-like particles by polymerizing alkenyl aromatic monomer in the presence of the polysiloxane.

4,226,762

ANTIFRICTION MATERIALS

Gilbert Bourrin, Lyons, France, assignor to Cestidur, Villeurbanne, France

Continuation of Ser. No. 744,746, Nov. 24, 1976, abandoned. This application Dec. 1, 1978, Ser. No. 965,322
Claims priority, application France, Nov. 26, 1975, 75 36906
Int. Cl.[2] C08K 7/20
U.S. Cl. 260—42.46 5 Claims

1. A moulded antifriction material having very good resistance to wear consisting essentially of, by weight, from about 68 to about 84% of polyethylene having a molecular weight from about 1×10^6 to about 6×10^6, from about 12 to about 28% of glass micro-beads having a grain size of from about 1 to about 44 microns and a density of about 1.45 kg/l, and the balance comprising an antistatic material.

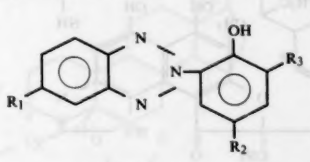
4,226,763

2-[2-HYDROXY-3,5-DI-(α,α-DIMETHYLBENZYL)-PHENYL]-2H-BENZOTRIAZOLE AND STABILIZED COMPOSITIONS

Martin Dexter, Briarcliff Manor, and Roland A. E. Winter, Armonk, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 26, 1978, Ser. No. 918,984
Int. Cl.[2] C08K 5/34; C07D 249/20
U.S. Cl. 260—45.8 N 10 Claims

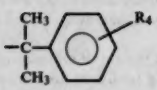
1. A compound of the formula



wherein

R_1 is hydrogen or chloro,

R_2 and R_3 are independently the group



where R_4 is hydrogen or lower alkyl.

4,226,764

α-AMYLASE INHIBITOR FROM A STREPTOMYCETE AND PROCESS FOR ITS PREPARATION

Volker Oeding, Kelkheim; Werner Pfaff, Hofheim am Taunus; Laszlo Vertesy, Eppstein, and Hans-Ludwig Weidenmüller, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 17, 1978, Ser. No. 870,247

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1977, 2701890

Int. Cl.[2] **C07G** *7/028*

U.S. Cl. 260—112 R **1 Claim**

1. Peptidic glycoside hydrolase inhibitor obtained by cultivating *Streptomyces tendae* 4158 (ATCC no. 31210) and isolating the inhibitor from the culture, said inhibitor having a molecular weight in the range of from 5,000 to 10,000, an absorption maximum in the ultraviolet light at 276 nm, an isoelectric point of 4.4 and the following amino acid composition:

aspartic acid	5–6	glycine	5–6
threonine	5–6	alanine	5–6
serine	3–5	cysteine	3–4
glutamic acid	5–6	valine	5–6
proline	2–3	isoleucine	1–2
leucine	3–4	lysine	0–1
tyrosine	4–5	arginine	2–3
phenylalanine	0–2	tryptophan	1–2
histidine	1–2		

4,226,765

NOVEL RIFAMYCIN COMPOUNDS OF HIGH ANTIBIOTIC ACTIVITY

Leonardo Marsili; Vittorio Rossetti, and Carmine Pasqualucci, all of Milan, Italy, assignors to Archifar Industrie Chimiche Del Trentino S.p.A., Rovereto, Italy

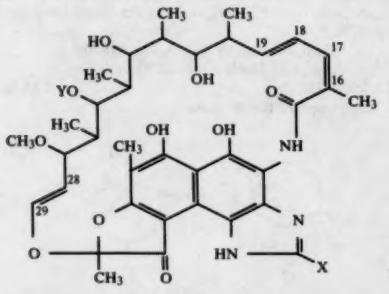
Filed May 12, 1976, Ser. No. 685,624

Claims priority, application Italy, May 20, 1975, 5157 A/75

Int. Cl.[3] **C07D** *491/08*

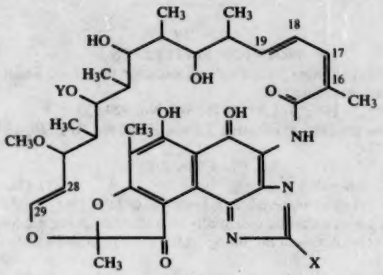
U.S. Cl. 260—239.3 P **5 Claims**

1. A rifamycin compound selected from the group comprising compounds having the formula:



(I)

wherein: X is a radical selected from the group comprising hydrogen, carboxyl, alkyl with less than 10 carbon atoms, cycloalkyl with less than 7 carbon atoms, alkenyl with less than 4 carbon atoms, cycloalkenyl with less than 7 carbon atoms, aryl hydrocarbon with less than 13 carbon atoms, aryl hydrocarbon-alkyl with less than 14 carbon atoms, aryl hydrocarbon-alkenyl with less than 11 carbon atoms, a heterocycle selcted from the group comprising thiophene, furan, thiazole, tetrazole, thionaphtene, methylene dioxyphenyl, and pyridine, substitution products of the above specified radicals with a substituent which is at least one radical different therefrom and selected from the group comprising, in addition to all of the above specified radicals, halogen, hydroxyl, alkoxyl, nitro, amino, N-alkylamino, N,N-dialkylamino, formyl, carboxyl, carboalkoxy, carboxyalkoxy, N,N-dialkylaminoalkoxy, alkanoyloxy and acetamido, there being less than 14 carbon atoms in said radical X; Y is —H or —$COCH_3$, and its 16, 17, 18, 19 tetrahydroderivatives and 16, 17, 18, 19, 28, 29 hexahydroderivatives and corresponding oxidized products having the formula:



(II)

4,226,766

NOVEL METHOD FOR PREPARING N(1)-ALKYLATED-5-PHENYL-7-SUBSTITUTED-2-DEOXY-1,4-BENZODIAZEPINES

Franjo Kajfez; Vitomir Sunjic, and Vesna Caplar, all of Zagreb, Yugoslavia, assignors to CRC Compagnia di Recerca Chimica S.A., Chiasso, Switzerland

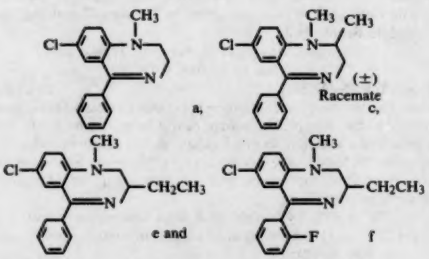
Continuation of Ser. No. 740,075, Nov. 8, 1976, abandoned, and a continuation-in-part of Ser. No. 684,450, May 7, 1976, abandoned. This application Jul. 27, 1978, Ser. No. 928,833

Claims priority, application Switzerland, May 12, 1975, 6068/75

Int. Cl.[3] **C07D** *243/16*

U.S. Cl. 260—239 BD **2 Claims**

1. A process for preparing compounds of the formulas:



which comprises reacting 0.5 mole of the methyl ester of polyphosphoric acid with 0.14 mole of the appropriate respective starting materials, to wit:

a=2-amino-5-chloro(2'-hydroxyethylketimine)-benzophenone for 5 hours at about 160° C.

c=2-amino-5-chloro-(2'-hydroxy-2'-methylethylketimine)-benzophenone for 8 hours at about 140° C.

e=2-amino-5-chloro-(1'-ethyl-2'-hydroxyethylketimine)-benzophenone for 8 hours at about 140° C.

f=2-amino-5-chloro-(1'-ethyl-2'-hydroxyethylketimine)o-fluoro-benzophenone for 8 hours at about 140° C., respectively, and isolating the respective products.

4,226,767

INTERMEDIATES FOR 3-AMINOAZETIDIN-2-ONES

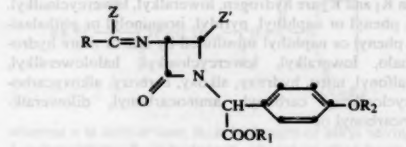
Robin D. G. Cooper; Gary A. Koppel, and Lawrence J. McShane, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 933,707, Aug. 15, 1978, Pat. No. 4,180,507, which is a division of Ser. No. 775,240, Mar. 7, 1977, Pat. No. 4,127,568. This application May 21, 1979, Ser. No. 41,281

Int. Cl.[3] C07D *205/08, 277/06, 513/04*

U.S. Cl. 260—239 A 5 Claims

1. The compound of the formula



wherein R is C_1–C_3 alkyl, phenyl, or benzyl; R_1 is methyl, benzyl, 4-methoxybenzyl, or diphenylmethyl; R_2 is benzyl, 4-methoxybenzyl, or diphenylmethyl; and Z and Z' are both hydrogen or both chloro.

4,226,768

PROCESS FOR THE PREPARATION OF IMIDAZOBENZODIAZEPINES

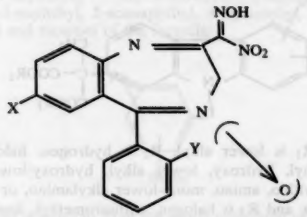
Armin Walser, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 29, 1979, Ser. No. 43,417

Int. Cl.[2] C07D *243/16*

U.S. Cl. 260—239 DD 1 Claim

1. A compound of the formula



wherein X is selected from the group consisting of hydrogen, halogen, nitro and trifluoromethyl and Y is selected from the group consisting of hydrogen, halogen and trifluoromethyl.

4,226,769

PROCESS FOR PREPARING A SOLID PREPARATION OF A PENICILLIN DERIVATIVE

Terutsugu Tsuji; Shigeji Sato, both of Osaka; Keiji Fujioka, Amagasaki; Yoshiya Yamahira, and Tadao Maeda, both of Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

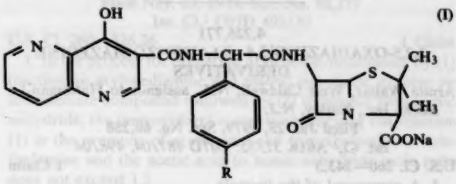
Filed Nov. 17, 1978, Ser. No. 961,841

Claims priority, application Japan, May 8, 1978, 53/54804

Int. Cl.[2] C07D *499/68*

U.S. Cl. 260—239.1 5 Claims

1. In a process for freeze-drying an aqueous solution of a penicillin derivative of the formula:



(I)

wherein R is a hydrogen atom or a hydroxyl group, by evaporating a frozen aqueous solution of the penicillin derivative (I) under vacuum from the frozen state to dryness, the improvement which comprises maintaining the temperature of the solution during the primary drying period of the drying process within a range from the eutectic point of the solution as determined by the electric resistance method to −8° C. when R is a hydrogen atom in said penicillin derivative, or from said eutectic point to −10° C. when R is a hydroxyl group in said penicillin derivative.

4,226,770

SYNTHESIS OF STEROIDS

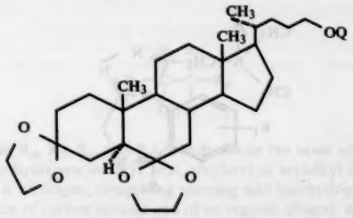
Emil T. Kaiser, 5634 S. Woodlawn Ave., Chicago, Ill. 60637

Continuation of Ser. No. 876,753, Feb. 10, 1978, Pat. No. 4,163,744. This application Feb. 23, 1979, Ser. No. 14,695

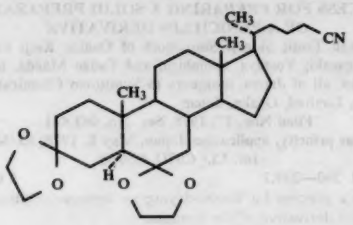
Int. Cl.[3] C07J *21/00*

U.S. Cl. 260—239.55 C 18 Claims

1. In a process for preparing a 3,6-diketo steroid compounds, the step of heating a compound having the structure:



with a metal cyanide, where Q is an aryl or alkyl sulfonyl group to produce the compound having the structure:

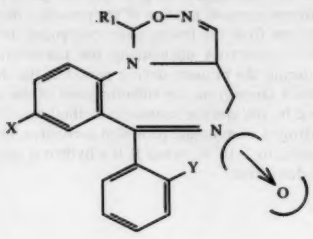


4,226,771
1,2,5-OXADIAZINO[5,4-a][1,4]BENZODIAZEPINE DERIVATIVES

Armin Walser, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jul. 25, 1979, Ser. No. 60,258
Int. Cl.[2] A61K *31/55*; C07D *487/04, 498/04*
U.S. Cl. 260—243.3 1 Claim

1. A compound of the formula



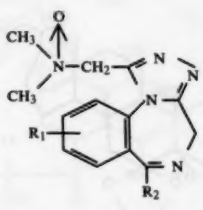
wherein
X and Y are selected from the group consisting of hydrogen, halogen and trifluoromethyl and
R_1 is hydrogen.

4,226,772
1-[(DIALKYLAMINO)METHYL]-6-PHENYL-4H-S-[4,3,-A][1,4]TRIAZOLOBENZODIAZEPINE N^1-OXIDE

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 853,290, Nov. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 713,923, Aug. 12, 1976, abandoned, which is a division of Ser. No. 666,902, Mar. 15, 1976, Pat. No. 4,008,175. This application Sep. 8, 1978, Ser. No. 940,802
Int. Cl.[3] A61K *31/55*
U.S. Cl. 260—245.5 5 Claims

1. A compound of the formula II:



II

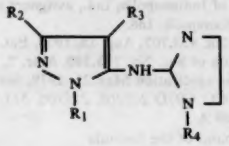
wherein R_1 is hydrogen, fluoro, chloro, bromo, nitro, trifluoromethyl or alkylthio in which the alkyl moiety is of 1 to 3 carbon atoms, inclusive; and wherein R_2 is phenyl, o-chlorophenyl, o-fluorophenyl, or 2,6-difluorophenyl or the pharmacologically acceptable acid addition salts thereof.

4,226,773
PYRAZOLYL AMINO IMIDAZOLINES AS DIURETIC AGENTS

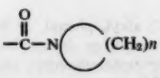
John J. Kyncl, Lake Forest, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed May 7, 1979, Ser. No. 36,883
Int. Cl.[2] A61K *31/40, 31/47, 31/415, 31/435*
U.S. Cl. 424—273 P 9 Claims

1. A method of increasing urinary excretion in a subject in need thereof which comprises administering to said subject an effective amount sufficient to produce increased urinary excretion of a compound represented by the structural formula



wherein R_1 and R_2 are hydrogen, loweralkyl, lowercycloalkyl, benzyl, phenyl or naphthyl, pyridyl, isoquinolyl or phthalazinyl, or phenyl or naphthyl substituted by one or more hydrogen, halo, loweralkyl, lowercycloalkyl, haloloweralkyl, aminosulfonyl, nitro, hydroxy, alkoxy, carboxy, alkoxycarbonyl, cycloalkoxy carbonyl, aminocarbonyl, diloweralkylaminocarbonyl or



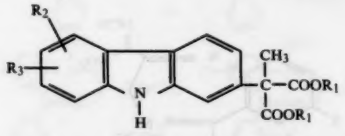
wherein n is 4 or 5.
R_3 is hydrogen, halogen, loweralkyl or phenyl or naphthyl, and
R_4 is hydrogen, acetyl, amino or loweralkyl, and the pharmaceutically acceptable acid addition salts thereof.

4,226,774
CARBAZOLE MELONATES

Harvey Gurien, West Orange, and Sidney Teitel, Clifton, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 23,114, Mar. 23, 1979, which is a division of Ser. No. 935,197, Aug. 21, 1978, Pat. No. 4,158,007. This application Aug. 8, 1979, Ser. No. 64,963
Int. Cl.[2] C07D *209/86*
U.S. Cl. 260—315 2 Claims

1. A compound of the formula



V

wherein R_1 is lower alkyl, R_2 is hydrogen, halogen, trifluoromethyl, hydroxy, lower alkyl, hydroxy-lower alkyl, lower alkylthio, amino, mono-lower alkylamino, or di-lower alkylamino; and R_3 is halogen, trifluoromethyl, lower alkyl, hydroxy-lower alkyl, lower alkoxy, lower alkylthio, hydroxy, amino, mono-lower alkylamino or di-lower alkylamino, or R_2, taken together with an adjacent R_3, is also lower alkylenedioxy.

4,226,775
SUBSTITUTED THIO-SUBSTITUTED BENZYL-PROPIONYL-L-PROLINES

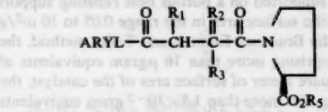
Francis J. McEvoy, Pearl River, and Jay D. Albright, Nanuet, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

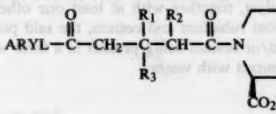
Continuation-in-part of Ser. No. 939,564, Sep. 5, 1978, abandoned. This application Jun. 1, 1979, Ser. No. 44,733

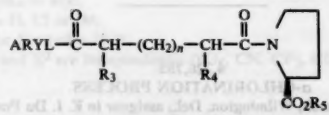
Int. Cl.³ C07D *207/16*; A61K *31/40*

U.S. Cl. 260—326.33 **26 Claims**

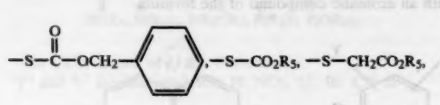
1. A compound selected from the group consisting of those of the formulae:

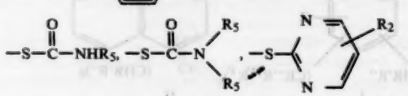

(I)

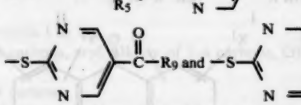

(II)


(III)

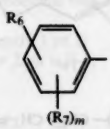
wherein n is zero or one; R_1 is hydrogen or alkyl having up to 3 carbon atoms; R_2 is hydrogen, phenyl or alkyl having up to 3 carbon atoms; R_3 is mercapto, formylthio, benzoylthio, alkanolythio having from 2 to 4 carbon atoms or moieties of the formulae:







wherein R_9 is phenyl; R_4 is hydrogen, phenyl or alkyl having up to 4 carbon atoms; R_5 is hydrogen or alkyl having up to 4 carbon atoms; and ARYL is selected from the group consisting of 1-naphthyl, 2-naphthyl, 4-chloro-1-naphthyl, 5,6,7,8-tetrahydro-1-naphthyl, 5,6,7,8-tetrahydro-2-naphthyl, 4-methoxy-1-naphthyl, 5-acenaphthyl, 4-biphenylyl, 5-indanyl, 4-indanyl and moieties of the formula:



wherein R_6 is selected from the group consisting of hydrogen, fluoro, chloro, bromo, trifluoromethyl, cyano, amnio, phenoxy, halophenoxy, phenylthio, halophenylthio, p-cyclohexylphenoxy, alkyl having up to 4 carbon atoms, alkoxy having up to 4 carbon atoms, alkylamino having up to 4 carbon atoms, alkanoylamino having from 2 to 4 carbon atoms and alkoxycarbonyl having from 2 to 4 carbon atoms, R_7 is selected from the group consisting of chloro, fluoro, bromo, alkyl having up to 4 carbon atoms and alkoxy having up to 4 carbon atoms, and m is zero, one or two; and the pharmacologically acceptable cationic salts thereof when R_5 is hydrogen.

4,226,776
PREPARATION OF ARYLENE-BIS-MALEIMIDES

Raymond D. Clark, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,277

Int. Cl.³ C07D *403/10*

U.S. Cl. 260—326.26 **1 Claim**

1. In the process for preparing arylene-bis-maleimides by (1) reacting an arylenediamine and maleic anhydride to form an intermediate compound followed by (2) treatment with acetic anhydride, the improvement comprising carrying out reaction (1) in the presence of acetic acid and trimethylamine or triethylamine and the acetic acid to acetic anhydride mole ratio does not exceed 1.3.

4,226,777
3-FLUORO-3-NITROOXETANE

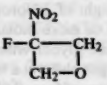
Kurt Baum, Pasadena, and Philip T. Berkowitz, Santa Ana, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 933,364, Aug. 14, 1978, abandoned. This application Jul. 20, 1979, Ser. No. 59,920

Int. Cl.³ C07D *305/08*

U.S. Cl. 260—333 **6 Claims**

1. A compound having the structure:



4,226,778
PROCESS FOR THE MANUFACTURE OF ALKYLENE CARBONATES

Carlo Venturello, Turin, and Rino D'Aloisio, Novara, both of Italy, assignors to Montedison S.p.A., Milan, Italy

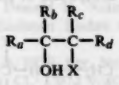
Filed Apr. 12, 1979, Ser. No. 29,564

Claims priority, application Italy, Apr. 14, 1978, 22323 A/78

Int. Cl.² C07D *317/36, 317/38*

U.S. Cl. 260—340.2 **22 Claims**

1. A process for the manufacture of alkylene carbonates, starting from a corresponding vicinal halohydrin of the formula:



wherein R_a, R_b, R_c, and R_d, which can be the same or different, are hydrogen or alkyl, aryl, alkylaryl or arylalkyl radicals and X is a halogen, comprising reacting said halohydrin, in the presence of carbon dioxide and of an organic diluent, with the bicarbonate of a quaternary -onium compound, where "-onium" means ammonium, phosphomium, arsonium, or stibonium.

4,226,779

PROCESS FOR ISOMERIZING METHYL-DELTA-4-TETRAHYDROPHTHALIC ANHYDRIDE

Motoyuki Yamato, Kamakura, and Tadao Natsuume, Yokosuka, both of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Apr. 30, 1979, Ser. No. 34,502
Claims priority, application Japan, May 4, 1978, 53-52670; Jun. 2, 1978, 53-66533
Int. Cl.[2] C07D *307/89*
U.S. Cl. 260—346.3 5 Claims

1. A process for isomerizing methyl-delta-4-tetrahydrophthalic anhydride without double-bond shift, which comprises heat-treating it at a temperature of 60° to 300° C. for a period of 0.1 to 30 hours in the presence of at least one nitrogen-containing compound selected from the group consisting of (a) a quaternary ammonium compound and (b) a compound having a nitrogen atom bonded to the carbon atom of the carbonyl group.

4,226,780

MANUFACTURE OF PROPYLENE OXIDE

Gerd Fouquet, Ludwigshafen; Franz Merger, Frankenthal, and Karl Baer, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 21, 1978, Ser. No. 879,723
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1977, 2709440
Int. Cl.[3] C07D *301/02*
U.S. Cl. 260—348.16 5 Claims

1. A process for the manufacture of propylene oxide which comprises heating 1,2-propylene glycol or a mixture containing at least 70% by weight of 1,2-propylene glycol and up to 30% by weight of one or more monoesters, with or without diesters, of 1,2-propylene glycol with low molecular weight carboxylic acids, in the gas phase at a temperature of from 300° to 500° C. under a pressure of from 0.01 to 1 bar over a catalyst which contains a weakly acidic carrier and an added basic alkali metal salt of a low-molecular weight carboxylic acid.

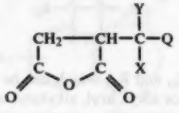
4,226,781

1,1,2,3-PROPANE TETRACARBOXYLIC ACID COMPOUNDS

Eddie N. Gutierrez, Fort Lee, N.J., assignor to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 848,549, Nov. 4, 1977, Pat. No. 4,146,543. This application Dec. 18, 1978, Ser. No. 970,827
Int. Cl.[2] C07D *307/60*
U.S. Cl. 260—346.74 5 Claims

1. A polyfunctional compound of the formula



wherein

(A) X is COOR and R is methyl or ethyl;

(B) Y is COOR′ and R′ is methyl or ethyl; and

(C) Q is OH, H or CH_3.

4,226,782

PRODUCTION OF ALKYLENE OXIDES AND CATALYSTS THEREOF

Percy Hayden; Richard W. Clayton, both of Middlesbrough, England, and Alan F. G. Cope, Cheltenham, Australia, assignors to Imperial Chemical Industries Limited, London, England

Filed May 8, 1978, Ser. No. 903,403
Claims priority, application United Kingdom, May 23, 1977, 21611/77
Int. Cl.[3] C07D *301/10*; B01J *23/04, 23/50*
U.S. Cl. 260—348.34 8 Claims

1. A catalyst for the production of an alkylene oxide by oxidation of the corresponding olefine with oxygen which comprises silver supported on a porous heat resisting support which has a specific surface area in the range 0.05 to 10 m^2/g as measured by the Brunauer Emmett and Teller method, the catalyst also comprising more than 16 μgram equivalents of potassium per square meter of surface area of the catalyst, the said amount being also more than 1.5×10^{-5} gram equivalents per gram of catalyst, together with at least one other alkali metal selected from rubidium and cesium, the said potassium and rubidium and/or cesium being present in a form which is extractable by contact with water.

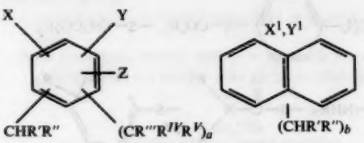
4,226,783

α-CHLORINATION PROCESS

Frank D. Marsh, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

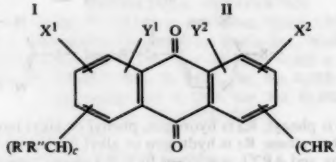
Filed Jul. 3, 1978, Ser. No. 921,382
Int. Cl.[3] C07C *50/16, 21/24, 50/24*; C07B *9/00*
U.S. Cl. 260—351 9 Claims

1. A process for α-chlorination of a side chain of an aromatic compound which comprises contacting dichlorine monoxide with an aromatic compound of the formula

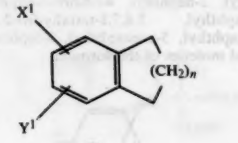


I

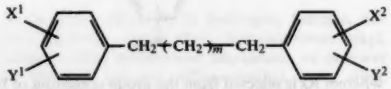
II



III



IV

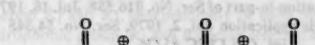


V

wherein for Formula I;

X is NO_2, CN, CF_3, Cl, Br, F,

SO_2R_2, SO_3R_2, SO_2CF_3, SO_2Cl, $SO_2NR_3R_4$,

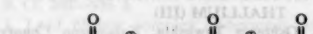


or CCl_3;
Y is H, NO_2, Cl, Br, F, CN, CF_3,

SO_2R_2, SO_3R_2, $SO_2NR_3R_4$, OCF_3,

OR_6 or aryl;
Z is H, Cl or Br;
and for Formulae II–V:
X^1 and X^2 are independently NO_2, CN, CF_3, Cl, Br, F,

SO_2R_2, SO_3R_2, SO_2CF_3, SO_2Cl, $SO_2NR_3R_4$,



or CCl_3 or can be H for Formula III;
Y^1 and Y^2 are independently H, NO_2, Cl, Br, CN or

wherein in Formula I to V,
R_1 is alkyl of 1–8 carbons, aryl, alkoxy of 1–4 carbons, OH or NR_3R_4;
R_2 is alkyl of 1–4 carbons;
R_3 and R_4 are independently H or alkyl of 1–4 carbons;
R_5 is alkyl of 1–8 carbons, trifluoromethyl, or aryl;
R_6 is H or alkyl of 1–3 carbons; and furthermore,
R′ and R″ are independently H, alkyl of 1–3 carbons, or are joined to form a carbocyclic ring of 5 or 6 carbons; and for R″, it can also be alkyl of 1–20 carbon atoms;
R‴, R^{IV} and R^{V} are independently H or methyl;
R^{VI} and R^{VII} are independently H, alkyl of 1–3 carbon or are joined to form a carbocyclic ring of 5 or 6 carbons;
a is 0 or 1;
b, and c are independently 1 or 2;
n is 1 or 2; d is 0, 1, or 2; m is 0–6;
provided when X=

Y and Z both cannot be H provided when y=OR_6, Z cannot be H.

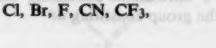
4,226,784

2- AND 5-AMINOALKYLAMINO ANTHRAQUINONE DYES USEFUL AS BASIC DYES IN COLORING HAIR

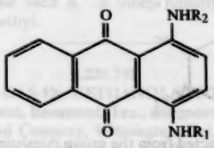
Gregoire Kalopissis, Paris, and Andrée Bugaut, Boulogne-sur-Seine, both of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 96,645, Dec. 9, 1970, abandoned, which is a division of Ser. No. 607,898, Jan. 9, 1967, Pat. No. 3,617,163. This application Feb. 25, 1977, Ser. No. 772,227
Claims priority, application Luxembourg, Jan. 10, 1966, 50233; Jun. 24, 1966, 51408; Dec. 9, 1966, 52555
Int. Cl.³ A61K *7/13*; C07C *97/24*; C09B *1/28*
U.S. Cl. 260—378 **3 Claims**

1. A compound of the formula



wherein R and R′ are hydrogen, n is a whole number between 2 and 6 inclusive and A is selected from the group consisting of (1) anthraquinonyl per se in which case the NR—$(CH_2)_n$—NHR′ chain is in position 2 of said anthraquinonyl or (2) anthraquinonyl of the formula



wherein R_1 and R_2 are selected from the group consisting of hydrogen and lower alkyl and the NR—$(CH_2)_n$—NHR′ chain occupies position 5 of said anthraquinonyl.

4,226,785

PROCESS FOR DEHYDROGENATION OF STEROLS TO PRODUCE Δ4-3-KETOSTEROIDS

Donald R. Nelan, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 4, 1979, Ser. No. 81,954
Int. Cl.³ C07J *71/00*
U.S. Cl. 260—397.25 **16 Claims**

1. A process which comprises dehydrogenating a 3-β-hydroxy steroid or a mixture of soy sterols to form the corresponding Δ4-3-keto derivatives, the improvement which comprises dehydrogenating said steroid or mixture of sterols using either copper or palladum as the catalyst and in the presence of a dialkyl ketone solvent.

4,226,786

PROCESS FOR DEHYDROGENATION OF STEROLS TO PRODUCE Δ^4-3-KETOSTEROIDS (II)

Charles H. Foster, and Donald R. Nelan, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 4, 1979, Ser. No. 81,957
Int. Cl.³ C07J *9/00*
U.S. Cl. 260—397.2 **13 Claims**

1. A process which comprises dehydrogenating a 3-β-hydroxy steroid or a mixture of soy sterols to form the corresponding Δ^4-3-keto derivatives, the improvement which comprises dehydrogenating said steroid or mixture of soy sterols using a supported nickel catalyst in the presence of a dialkyl ketone and a 1-olefin.

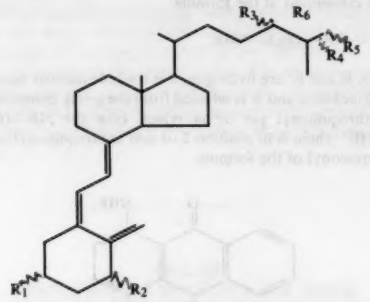
4,226,787

FLUOROVITAMIN D COMPOUNDS AND PROCESSES FOR THEIR PREPARATION

Hector F. DeLuca; Heinrich K. Schnoes; Joseph L. Napoli, Jr., and Bruce L. Onisko, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 928,279, Jul. 26, 1978, abandoned. This application Aug. 6, 1979, Ser. No. 64,212
Int. Cl.[2] C07J *9/00, 21/00*
U.S. Cl. 260—397.2 4 Claims

1. Compounds having the formula



where R_1 is selected from the group consisting of hydrogen, hydroxy, O-acyl and O-lower-alkyl, and
where R_2 is fluoro and where each of
R_3, R_4, and R_5 is selected from the group consisting of hydrogen, hydroxy, O-lower-alkyl, O-acyl, lower-alkyl and fluoro, and
R_6 is hydrogen or lower alkyl.

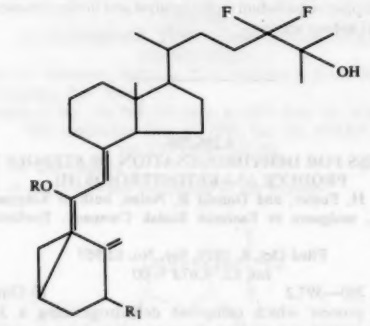
4,226,788

24,24-DIFLUORO-1α,25-DIHYDROXYCHOLECALCIFEROL

Hector F. DeLuca; Heinrich K. Schnoes, both of Madison, Wis.; Nobuo Ikekawa, Tokyo, Japan; Yoko Tanaka, Madison, Wis., and Yoshiro Kobayashi, Tokyo, Japan, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 24,848, Mar. 28, 1979, abandoned. This application Aug. 6, 1979, Ser. No. 64,254
Int. Cl.[2] C07J *9/00*
U.S. Cl. 260—397.2 1 Claim

1. Compounds having the formula



where R is a hydrocarbon radical having from 1 to about 4 carbon atoms and
R_1 is selected from the group consisting of hydrogen and hydroxyl.

4,226,789

REMOVAL OF NITROSAMINES FROM DENITROANILINES BY TREATMENT WITH HCL

Richard F. Eizember, Greenwood; Kathleen R. Vogler, Indianapolis, and William N. Cannon, Cumberland, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 878,834, Feb. 17, 1978, abandoned, which is a continuation-in-part of Ser. No. 816,558, Jul. 18, 1977, abandoned. This application Jul. 2, 1979, Ser. No. 54,345
Int. Cl.[2] C07C *85/26*
U.S. Cl. 260—397.7 R 78 Claims

1. The process which comprises
(1) contacting a nitrosamine-containing dinitroaniline selected from the group consisting of
trifluralin
isopropalin,
benefin,
ethalfluralin,
butralin,
pendimethalin,
fluchloralin,
profluralin,
dinitramine,
4-trifluoromethyl-2,6-dinitro-3-chloro-N,N-diethylaniline,
4-methyl-2,6-dinitro-N,N-bis(2-chloroethyl)aniline,
oryzalin, and
nitralin,
(a) in liquid phase
(b) with a reagent selected from the group consisting of 20–38% hydrochloric acid and gaseous HCl until the concentration of the nitrosamine has been reduced from about several thousand ppm or less; and
(2) thereafter recovering the dinitroaniline.

4,226,790

PROCESS FOR OXIDIZING THALLIUM (I) TO THALLIUM (III)

Jerry A. Walker, Oshtemo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 807,032, Jun. 16, 1977, Pat. No. 4,135,051. This application Aug. 14, 1978, Ser. No. 933,665
The portion of the term of this patent subsequent to Jan. 16, 1996, has been disclaimed.
Int. Cl.[2] C07F *5/00*
U.S. Cl. 260—429 R 9 Claims

1. A process for oxidizing monovalent thallium ions to trivalent ions which comprises reacting a monovalent thallium salt of an organic carboxylic acid having a pKa above about 2 in a liquid medium with a perorganic acid having a pKa above 2 in the presence of a reactive form of manganese said manganese being provided in a sufficiently soluble form and in an amount sufficient to promote the oxidation of monovalent thallium ions to the trivalent thallium valence state.

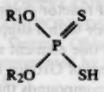
4,226,791

METHOD AND A REAGENT MIXTURE FOR REMOVING METAL IONS FROM AN AQUEOUS SOLUTION BY MEANS OF LIQUID-LIQUID EXTRACTION

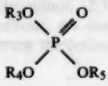
Hans Reinhardt, Vːa Frölunda, and Harald D. Ottertun, Mölndal, both of Sweden, assignors to Berol Kemi AB, Stenungsund, Sweden

Continuation of Ser. No. 786,848, Apr. 12, 1977, abandoned. This application Nov. 30, 1978, Ser. No. 964,959
Int. Cl.[2] C07F *1/08, 11/00, 15/02, 15/04*
U.S. Cl. 260—429 R 11 Claims

1. A method of extracting metal ions from an aqueous solution by means of liquid-liquid extraction which comprises bringing an aqueous solution containing metal ions into contact with an organic liquid which is insoluble in water and which contains a reagent mixture including a water-insoluble diester of dithiophosphoric acid having the general formula



wherein R_1 and R_2, independently of each other, represent a hydrophobic group, R_1 and R_2 being selected so that the dithiophosphoric acid is insoluble in water, as well as a water-insoluble phosphate having the general formula



wherein R_3 represents a hydrophobic group and R_4 and R_5, independently of each other, represent hydrogen or a hydrophobic group, R_3, R_4 and R_5 being selected so that the phosphate is insoluble in water, in a ratio by volume between the dithiophosphoric acid and the phosphate of from 1:99 to 9:1, whereupon the metal ions pass to the organic liquid from where said metal ions can be readily re-extracted and stripped therefrom.

4,226,792

LEAD CHELATE COMPLEX COMPOUNDS

Yuji A. Tajima, Teaneck, N.J., assignor to NL Industries, Inc., New York, N.Y.

Filed Mar. 5, 1964, Ser. No. 350,635

Int. Cl.[3] C07F *7/24*

U.S. Cl. 260—435 A **18 Claims**

1. Lead chelate complex compounds selected from the group consisting of lead 3-nitrosalicylaldehyde, lead 5-nitrosalicylaldehyde, lead 5-chlorosalicylaldehyde, lead 2,4-dihydroxybenzophenone, lead ortho-hydroxyacetophenone, lead 1,4-dihydroxyanthraquinone, lead 2,5-dihydroxybenzoquinone, lead bis-ortho-hydroxyphenacylphenone, lead phenylsalicylate, lead ethylsalicylate, lead disalicylamide, lead disalicylethylene diamide, lead salicylamide, lead bis-salicylaldehyde-o-phenylene diimine, lead salicylidene acetamide, lead bis-salicylaldehydeethylene diimine, and lead (o-carboxyphenyl) salicylaldimine.

4,226,793

PROCESS FOR THE MANUFACTURE OF MONOMERIC AND OLIGOMERIC SILICIC ACID ESTERS

Hans-Joachim Kötzsch; Claus-Dietrich Seiler, both of Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Sep. 28, 1978, Ser. No. 946,464

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 2744726

Int. Cl.[2] C07F *7/04*

U.S. Cl. 556—470 **13 Claims**

1. In a process for the manufacture of an orthosilicic acid ester or an oligomer thereof wherein a tetrachlorosilane or a higher homolog thereof is contacted with a primary alcohol, in some instances with the addition of water, the improvement which comprises introducing the alcohol directly into a tetrachlorosilane or higher homolog thereof liquid phase without said alcohol touching the gas phase and, after completion of the reaction, removing any residual hydrogen chloride from the reaction zone.

4,226,794

LOW-FOAMING ALKOXY-BIS(TRIALKOXYSILOXY)-SILANE SURFACTANTS

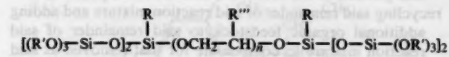
Michael Scardera, Hamden, and David F. Gavin, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed May 21, 1979, Ser. No. 40,629

Int. Cl.[3] C07F *7/04, 7/18*

U.S. Cl. 556—443 **14 Claims**

1. A low-foaming surfactant composition having the formula:



wherein n is an integer of about 10 to about 75; R is selected from hydrogen, alkyl, alkenyl, aryl, and aralkyl; each R' is independently selected from the same group as R with the proviso that at least a majority of the R' groups on each Si atom are sterically hindered alkyl groups having at least 3 carbon atoms; and each R''' is independently selected from hydrogen and methyl.

4,226,795

PURGE GAS IN METHANOL SYNTHESIS

Edward B. Bowman, Beaumont, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 882,917, Mar. 2, 1978, abandoned. This application May 4, 1979, Ser. No. 36,242

Int. Cl.[2] C07C *31/06*

U.S. Cl. 210—449.5 **23 Claims**

1. A process for the manufacture of methanol using a hydrogen-containing gaseous purge stream from a chemical manufacturing process comprising:

(a) raising the pressure of a second hydrogen-containing gaseous stream at a lower pressure than the purge stream by combining the two streams and feeding the combined streams to a hydrogen-enrichment zone;

(b) raising the hydrogen concentration in the combined stream in the hydrogen-enrichment zone by removing gaseous materials therefrom which are inert with respect to a methanol synthesis reaction;

(c) adjusting the hydrogen to carbon oxide molar ratio of the hydrogen-enriched gas stream to a level within the range of about 2:1 to 12:1 by addition of a carbon oxide thereto;

(d) feeding the carbon oxide-adjusted hydrogen-enriched gas stream to a methanol synthesis zone containing a methanol synthesis catalyst and forming a methanol-containing gaseous effluent, said zone maintained at a temperature below which any substantial methanation occurs and at a pressure no higher than the pressure of the purge stream; and

(e) recovering methanol from the gaseous effluent.

4,226,796

SULPH(ON)ATION PROCESS

Brian J. Akred; Alan J. Lambie, and John Maden, all of Whitehaven, England, assignors to Albright & Wilson Limited, West Midlands, England

Continuation of Ser. No. 686,433, May 14, 1976, abandoned. This application Dec. 5, 1977, Ser. No. 857,807

Int. Cl.[2] C07C *141/04, 143/24*

U.S. Cl. 260—459 R **19 Claims**

1. A continuous cyclic process for sulph(on)ating a sulph(on)atable organic feedstock by reacting said feedstock with sulphur trioxide comprising

forming a reactant liquid substantially free of inert diluent and comprising the organic feedstock and its sulph(on)ation derivative which has been recycled,

passing said reactant liquid through a static mixer without any moving parts and also passing undiluted liquid or

gaseous sulphur trioxide through said static mixer to contact said reactant liquid and form a reaction mixture, said reactant liquid being in a condition of turbulent flow at the point of contact of the sulphur trioxide and said reactant liquid and thereafter in the zone of reaction of sulphur trioxide and said reactant liquid,

removing a portion of the reaction mixture as sulph(on)ated product, the weight ratio of reaction mixture removed as said product to the remainder of the reaction mixture being in the range of about 1:40 to 1:2000,

cooling said reaction mixture before and/or after removing said portion of the reaction mixture as said product,

recycling said remainder of said reaction mixture and adding additional organic feedstock to said remainder of said reaction mixture to compensate for that removed as said product to form said reactant liquid, and

maintaining the temperature of said reactant liquid and said reaction mixture throughout the process within a maximum temperature differential of 10° C. and maintaining said reactant liquid and reaction mixture in said cyclic process under no externally applied vacuum.

4,226,797

PREPARATION OF MONOALKYL SULFURIC ACIDS AND THEIR SALTS

Pieter M. Bakker; Cornelis E. Kind, and Volker G. Aurich, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 856,141, Nov. 28, 1977, abandoned. This application Jan. 4, 1979, Ser. No. 939

Claims priority, application United Kingdom, Nov. 30, 1976, 49832/76

Int. Cl.³ C07C *139/08*

U.S. Cl. 260—460 **23 Claims**

1. A process for preparing the salts of secondary monoalkyl sulphuric acids which comprises:

(a) sulphating, in a sulphation reaction zone, an olefin reactant comprising one or more C_8 to C_{22} olefins by reacting at a temperature from −20° C. to 50° C. said olefin reactant with sulphuric acid, having an initial concentration between 75 and 100% by weight, in the presence of between 25 and 400% mole of one or more added C_8 to C_{22} secondary alcohols, based on the moles of said olefin reactant, the amount of sulphuric acid added to the sulphation reaction zone being in the ratio of from 1.5 to 15 moles of sulphuric acid per mole of olefin plus alcohol added to said reaction zone,

(b) neutralizing the secondary monoalkyl sulphuric acids so formed to yield the salts thereof,

(c) recovering the C_8 to C_{22} alcohols from the neutralization reaction product, and

(d) recycling the recovered alcohols to the sulphation reaction zone.

4,226,798

METHOD OF SELECTING OPERATION OF A FLUID-BED REACTOR AND APPARATUS FOR DOING SO

Joseph A. Cowfer, Medina; Dane E. Jablonski, Broadview Heights; Ronald M. Kovach, Avon Lake, and Angelo J. Magistro, Brecksville, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Oct. 6, 1978, Ser. No. 949,170

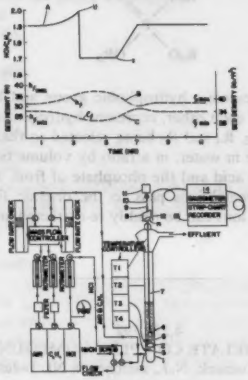
Int. Cl.³ C07C *120/14, 45/04, 17/15*; G05D *24/00*

U.S. Cl. 260—465.3 **20 Claims**

1. In a process for the ammoxidation of a monoolefin having 3 or 4 carbon atoms, using a catalytic fluid-bed reactor in which ammonia, oxygen and said monoolefin are feed components, which reactor is provided with a pendulum viscometer with low rotational velocity which does not appreciably disturb the state of said fluid-bed in the immediate vicinity of said viscometer, and means to provide said pendulum with a preselected initial angular displacement, a method for obtaining desired operation of said reactor comprising,

(a) charging said reactor with a supported catalyst on which is deposited at least one element selected from the group consisting of elements of Groups I, V, VI and VIII of the Periodic Table and compounds thereof, in the presence of which supported catalyst said ammoxidation occurs which increases stickiness of said catalyst as conversion of said feed components to desired products is improved,

(b) operating said reactor at an elevated temperature above about 100° C. but below a temperature deleterious to said catalyst,



(c) measuring a peak rate of damping of a predetermined torsional oscillation of said pendulum viscometer during operation of said fluid-bed at or near its inversion point,

(d) measuring a usual rate of damping of said predetermined torsional oscillation of said pendulum viscometer during usual, desired operating conditions,

(e) obtaining a quantitative difference between said usual rate and said peak rate of damping, and

(f) adjusting process conditions to operate said reactor while maintaining approximately said quantitative difference.

4,226,799

α-AMINOMETHYLENE-β-FORMYLAMINOPROPIONITRILE AND ITS MANUFACTURE

Wolfgang Bewert, Frankenthal, and Wolfgang Littmann, Mannheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

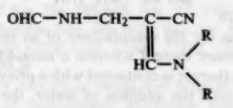
Filed Oct. 16, 1978, Ser. No. 951,567

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1977, 2748153; Apr. 26, 1978, 2818156

Int. Cl.³ C07C *87/452*

U.S. Cl. 260—465 E **6 Claims**

1. A compound of the formula



I

where the R groups, which may be the same or different, represent hydrogen, alkyl, aryl or aralkyl or together with the nitrogen form a morpholine or piperidine ring, the total number of carbon atoms of the two R groups being 1 to 20.

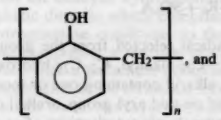
4,226,800

SYNTHESIS OF ACETYLENE-TERMINATED COMPOUNDS

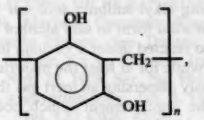
Lewellyn G. Picklesimer, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 14, 1979, Ser. No. 48,322
Int. Cl.[2] C07C 43/20, 121/75, 147/06; C08F 138/00
U.S. Cl. 260—465 F 13 Claims

13. A process for preparing a phenolic material containing propargyl groups which comprises reacting propargyl bromide with a phenolic material selected from the group consisting of resorcinol, hydroquinol, 2,3-dicyanohydroquinone, 4,4'-dihydroxydiphenylsulfone, 4,4'-isopropylidenediphenol, a phenol novolac resin having the following formula:



a resorcinol novolac resin having the following formula:



wherein n in each formula is an integer ranging from about 2 to 100, the reaction being conducted in an aqueous sodium hydroxide solution at a temperature ranging from about 70° C. to reflux temperature of the sodium hydroxide solution for a period of about 1 to 3 hours, the amount of propargyl bromide being about equivalent to the hydroxyl content of the phenolic material, and the mole ratio of sodium hydroxide to propargyl bromide being about 1:1.

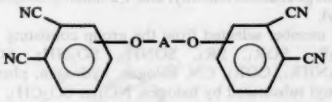
4,226,801

TERMINATED BIS(3,4-DICYANOPHENOXY) ALKANES

Teddy M. Keller, Alexandria, Va., and James R. Griffith, Riverdale Heights, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 25, 1979, Ser. No. 51,568
Int. Cl.[3] C07C 121/50
U.S. Cl. 260—465 F 8 Claims

1. A terminated dicyanophenoxy alkane of the general formula:



wherein A is an alkylene with a length from 2 to 30 carbon atoms provided that the α- and β-carbon atoms are not substituted and that no branching chain is more than five carbon atoms in length.

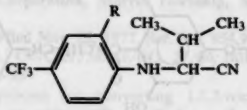
4,226,802

2-(4-TRIFLUOROMETHYLPHENYLAMINO)-3-METHYLBUTANOIC ACID ESTERS AND INTERMEDIATES THEREFOR

Richard J. Anderson, and Ted A. Baer, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

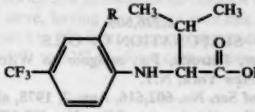
Filed Oct. 29, 1979, Ser. No. 89,003
Int. Cl.[3] C07C 101/447, 103/28, 119/20, 121/78
U.S. Cl. 260—465 E 10 Claims

1. A compound of the following formula:



wherein R is hydrogen, bromo, chloro, fluoro or methyl.

5. A compound of the formula:



wherein R is hydrogen, bromo, chloro, fluoro or methyl and R^1 is lower alkyl or one to three carbon atoms.

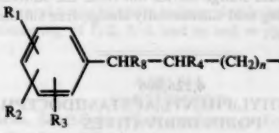
4,226,803

PROCESS FOR PRODUCTION OF OPTICALLY ACTIVE BASES

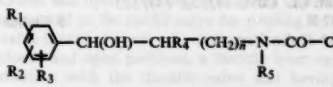
Karl H. Klingler, Langen, and Horst Traube, Dreieich, both of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Dec. 13, 1978, Ser. No. 969,067
Claims priority, application United Kingdom, Dec. 16, 1977, 52421/77
Int. Cl.[2] C07C 101/04; C07B 19/00; C07C 91/16, 87/28
U.S. Cl. 260—501.11 27 Claims

1. A process for preparing an optically active base from a racemic base



comprising reacting the racemic base in a solvent with an optically active half amide of an unsaturated aliphatic dicarboxylic acid of the formula



where R_1, R_2 and R_3 are hydrogen, halogen, a hydroxy group, a methyl group or a methoxy group or two of R_1, R_2 and R_3 together are a methylenedioxy group, R_4 is a methyl group, R_5, R_6 and R_7 are hydrogen or a C_1–C_4 alkyl group, R_8 is hydrogen or a hydroxy group and n is 0 or 1.

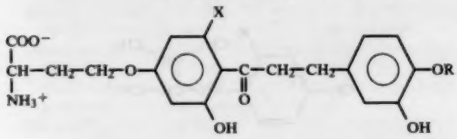
2. A process according to claim 1 also including the step of splitting an optically active homogeneous salt fraction into the corresponding optically active base and the added half amide.

4,226,804
ALPHA AMINO ACID DIHYDROCHALCONES

Grant E. DuBois, Palo Alto; Rebecca A. G. Stephenson, Redwood City, and Guy A. Crosby, Palo Alto, all of Calif., assignors to Dynapol, Palo Alto, Calif.

Filed Mar. 9, 1979, Ser. No. 19,054
Int. Cl.[2] C07C *101/72;* A23L *1/236*
U.S. Cl. 260—501.11 13 Claims

1. The dihydrochalcone represented by the formula



wherein X is selected from between hydrogen and hydroxy and R is an alkyl of from one to four carbon atoms.

4,226,805
SULFONATION OF OILS

Oscar W. Bauer, Petrolia, Pa., assignor to Witco Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 602,616, Aug. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 400,457, Sep. 24, 1973, abandoned, which is a continuation of Ser. No. 102,946, Dec. 30, 1970, abandoned. This application Sep. 9, 1976, Ser. No. 721,903
Int. Cl.[3] C07C *143/24*
U.S. Cl. 260—505 R 10 Claims

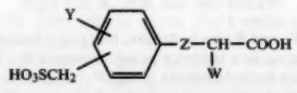
1. In a method for sulfonating aromatic petroleum oil feedstock with sulfur trioxide, the improvement, successful in avoiding the tough, intractable sludge which otherwise forms when sulfonating said feedstock with SO_3 at atmospheric pressure, which consists essentially in (i) mixing at a temperature in the range of 110°–200° F. of an aromatic petroleum feedstock with a liquid sulfonic acid diluent, said diluent being present in the concentration of about 3% to about 50%, by weight, based upon the weight of the feedstock, (ii) vigorously stirring said mixture while gradually adding, over a period of about 10 minutes to about 3 hours, an amount of sulfur trioxide sufficient to sulfonate said aromatic petroleum oil feedstock at substantially atmospheric pressure, (iii) thereafter allowing the resulting product mixture of sulfonated feedstock oil and sludge to stand whereby said sludge settles out from the sulfonated oil, and (iv) separating said substantially sludge-free sulfonated oil from said sludge.

4,226,806
7-[(SULFOMETHYL)PHENYL]ACETAMIDOCEPHALOSPORIN DERIVATIVES

Fortuna Haviv, Wheeling, Ill., and Abraham Patchornik, Ness Ziona, Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

Division of Ser. No. 849,231, Nov. 7, 1977, Pat. No. 4,148,997. This application Jan. 8, 1979, Ser. No. 1,559
Int. Cl.[2] C07C *143/52, 143/525*
U.S. Cl. 260—507 R 5 Claims

1. A compound of the formula



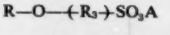
wherein Y is hydrogen, chlorine, bromine, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, or an alkoxy group of from 1 to 4 carbon atoms, Z is a bond, oxygen or sulfur; W is selected from hydrogen, methyl, amino, hydroxy, SO_3H, or $COOR_4$ wherein R_4 is selected from hydrogen or 5-indanyl with the proviso that when Z is oxygen or sulfur, W is other than hydroxy, or an acid halide thereof, with the proviso that when the compound is the acid halide, W is other than COOH.

4,226,807
PROCESS FOR MAKING ETHER SULFONATES

David R. McCoy, Austin, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Continuation-in-part of Ser. No. 881,286, Feb. 27, 1978, abandoned. This application Jun. 7, 1979, Ser. No. 46,271
Int. Cl.[2] C07C *143/42, 143/02*
U.S. Cl. 260—512 R 15 Claims

1. In a method of preparing ether sulfonates of the formula:



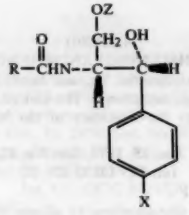
where R is a radical selected from the group consisting of C_2–C_{22} alkyl, C_2–C_{22} alkenyl, C_2–C_{22} hydroxyalkyl, C_2–C_{22} hydroxyalkenyl, alkaryl containing one or more C_1–C_{18} alkyl groups substituted on said aryl group, aralkyl containing 7–28 carbon atoms, and polyether derivatives of any of the foregoing, R_3 is alkylene, and A is an alkali metal cation which comprises the step of reacting in liquid phase an alcohol, ROH where R has the just stated significance with an alkali metal hydroxy-containing alkyl sulfonic acid salt which is substantially all added in solid form to said alcohol prior to initiation of reaction and so reacted under a vacuum less than about 300 mm of mercury, while for at least the majority of said reaction period continuously dispersing an inert gas through said liquid reaction mass; the improvement which comprises adding a small amount of said ether sulfonate to the reaction mass prior to the initiation of said reaction.

4,226,808
1-ARYL-2-DIHALOGENODEUTERIOALKANOYLAMIDO-1,3-PROPANEDIOL ANTIBACTERIAL AGENTS

Tattanahalli L. Nagabhushan, Parsippany, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Aug. 17, 1979, Ser. No. 67,267
Int. Cl.[2] C07C *103/127, 69/63;* C11C *3/00;* A61K *31/165*
U.S. Cl. 260—562 B 10 Claims

1. A D-(threo)-1-aryl-2-acylamido-1,3-propanediol of the following formula:



wherein R is a member selected from the group consisting of dihalogenodeuteriomethyl and 1,2-dihalogeno-1-deuterioethyl;

X is a member selected from the group consisting of NO_2, SO_2R_1, SOR_1, SR_1, $SONH_2$, SO_2NH_2, $SONHR_1$, SO_2NHR_1, COR_1, CN, halogen, hydrogen, phenyl, and phenyl substituted by halogen, NO_2 or SO_2CH_3, wherein R_1 is a member selected from the group consisting of methyl, ethyl, n-propyl and isopropyl; and

Z is a member selected from the group consisting of hydrogen, an acyl radical of a hydrocarboncarboxylic acid having up to 16 carbon atoms, an acyl radical of a hy-

drocarbondicarboxylic acid having up to 16 carbon atoms, and an acyl radical of an aminohydrocarboncarboxylic acid having up to 12 carbon atoms; and the pharmaceutically acceptable salts of said acyl radicals.

4,226,809

HYDROGENATION OF UNSATURATED DINITRILES USING CATALYST COMPRISING REACTION PRODUCTS OF NICKEL COMPOUND AND OF A PALLADIUM COMPOUND EACH WITH AN ALKALI METAL BOROHYDRIDE

Tod K. Shioyama, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 7, 1979, Ser. No. 64,470
Int. Cl.[2] C07C *85/12*
U.S. Cl. 260—583 P **20 Claims**

1. A process for the catalytic hydrogenation of a branched, unsaturated aliphatic dinitrile which comprises subjecting the same under hydrogenation conditions to the presence of a catalytic material comprising a reaction product of an alkali metal borohydride with a palladium compound which is reducible by hydrogenation to the elemental form and a reaction product of an alkali metal borohydride with a nickel compound which is reducible by hydrogen to the elemental form.

4,226,810

SPLITTING UP PYRAN RINGS

Vincenzo Redaelli, Mariano Comense; Renato De Simone, Como, and Edoardo Platone, San Donato Milanese, all of Italy, assignors to Anic, S.p.A., Palermo, Italy

Filed Nov. 28, 1978, Ser. No. 964,137
Claims priority, application Italy, Jan. 3, 1978, 19008 A/78
Int. Cl.[3] C07C *45/56*
U.S. Cl. 568—386 **8 Claims**

1. A process for splitting up the ring 2,6,6-trimethyl-5,6-dihydro-4H-pyran comprising the step of heating same in the presence of a water and a halogen catalyst.

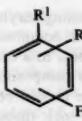
4,226,811

PREPARATION OF SUBSTITUTED FLUOROBENZENES

Heinz-Guenter Oeser, Ludwigshafen; Karl-Heinz Koenig, Frankenthal, and Dietrich Mangold, Neckargemuend, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

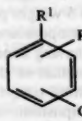
Filed Jan. 11, 1979, Ser. No. 2,596
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1978, 2803259
Int. Cl.[3] C07C *79/12*
U.S. Cl. 568—937 **3 Claims**

1. A process for the preparation of a substituted fluorobenzene of the formula



I

where R^1 is nitro or cyano and R^2 is hydrogen, an aliphatic radical or halogen, by reacting a substituted chlorobenzene of the formula



II

where R^1 and R^2 have the above meanings, with potassium fluoride in the presence of a crown ether and in the presence of an N,N-disubstituted carboxylic acid amide, nitrobenzene, nitrile, aliphatic sulfone and/or aliphatic sulfoxide as solvent, said reaction being carried out at from 150° to 230° C.

4,226,812

PROCESS FOR PRODUCING CHLOROTRIFLUOROETHYLENE

Wim J. M. Pieters, Morristown; William E. Gates, Andover, and Franz Wenger, Mountainside, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Nov. 25, 1977, Ser. No. 854,919
Int. Cl.[3] C07C *21/18, 19/045, 21/06;* B01J *27/00*
U.S. Cl. 570—157 **11 Claims**

1. In a process for converting 1,1,2-trichloro-1,2,2-trifluoroethane to chlorotrifluoroethylene, the improvement which comprises passing said trichlorotrifluoroethane in a mixture of oxygen, hydrogen chloride and ethylene in the vapor phase over a catalyst consisting essentially of a mixture of copper chloride and an alkali metal chloride salt occluded in a molecular sieve, having an average pore size diameter in the range of about 5 to 11 angstroms, at a temperature in the range of about 350° C. to 525° C., for a contact time of about 0.1 to 30 seconds.

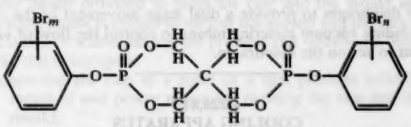
4,226,813

3,9-BROMOPHENOXY-2,4,8,10-TETRAOXA-3,9-DIPHOSPHASPIRO(5.5)UNDECANE-3,9-DIOXIDES

James A. Albright, Hampton, N.J., and Chester J. Kmiec, Williamsville, N.Y., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 685,754, May 13, 1976, abandoned. This application Apr. 27, 1979, Ser. No. 33,601
Int. Cl.[2] C07F *9/21;* C08K *5/52*
U.S. Cl. 260—927 R **2 Claims**

1. A compound of the formula



wherein m and n are integers independently selected from the group consisting of 1, 2, 3, 4, and m and m plus n equal 6.

4,226,814

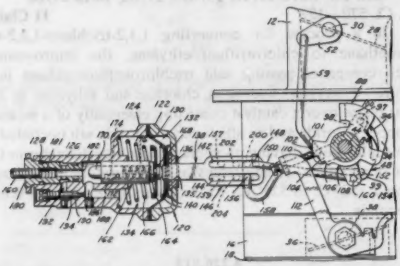
CARBURETOR

John Dirda, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 5, 1979, Ser. No. 17,516
Int. Cl.[3] F02M *1/10*
U.S. Cl. 261—39 B **9 Claims**

1. A carburetor having a choke valve rotatable between closed and open positions, a rotatable choke pulldown lever connected to the choke valve for rotating the same, a throttle valve biased towards a closed position and rotatable between closed and open positions, a throttle lever operably fixed for rotation with the throttle valve and having a stop screw thereon, a rotatable fast idle cam having first and second circumferentially contiguous radial face type steps thereon of lessening radial extent adapted in first and second rotative positions of the cam, respectively, to project into the path of movement of the stop screw in a throttle valve closing direction to stop the throttle valve rotation in a different open position as a function of the step engaged by the stop screw, a first link connected to the pulldown lever for moving the pulldown lever to open the choke valve, a second link con-

nected to the cam for rotating the cam to disengage the first cam step from the stop screw and engage the second cam step with the stop screw, a vacuum controlled servo, and control means connecting both the first and second links to the servo for controlled actuation of the pulldown lever and movement of the cam, the control means including an actuating rod reciprocable in opposite directions, the rod having a first elongated slot slidably receiving one end of the first link therein in a lost motion type manner, the rod having a second elongated slot slidably receiving therein one end of the second link in a lost motion type manner, the first link end abutting an end of the first slot when the choke valve is in a closed position, the second link end being spaced from the ends of the second slot



when the choke valve is closed whereby actuation of the rod in one direction first moves the first link to open the choke valve and subsequently moves the second link to rotate the cam, the servo including a housing, a movable fluid pressure actuated diaphragm in the housing with the housing defining a vacuum chamber and an ambient air vent chamber, means connecting the diaphragm to the rod for movement thereof, spring means biasing the diaphragm and rod in a choke valve closing direction, conduit means connecting a source of engine vacuum to the vacuum chamber, and means to control the movement of the diaphragm to provide a dual stage movement of the rod including vacuum metering means to control the flow of vacuum to act on the diaphragm.

4,226,815

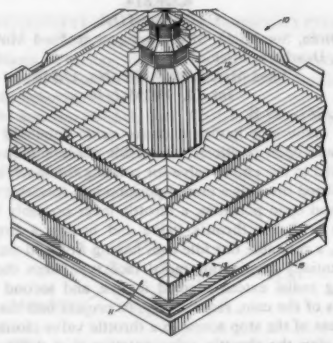
COOLING APPARATUS

Haggie I. Cockman, P.O. Box 1600, Sanford, Fla. 32771

Filed Nov. 19, 1979, Ser. No. 95,352

Int. Cl.³ B01F 3/04

U.S. Cl. 261—110 **17 Claims**



1. A liquid cooling apparatus comprising in combination:

a multi-level terraced structure forming a plurality of flow paths over each level thereof for the flow of a liquid from one level to the next lower level of each level of said terraced structure;

a central tower mounted on the top level of said terraced structure;

liquid input means connected to a source of liquid and leading into said central tower;

at least one liquid spray head mounted in said central tower to said liquid input means for spraying liquid being fed from said liquid input means into said central tower; and

air feed means for feeding air under pressure into said central tower beneath said sprayed liquid being dispersed from said liquid spray head whereby liquid entering said central tower through said liquid input means is cooled and aerated.

4,226,816

METHOD OF MANUFACTURING A CLUTCH FACING OF THE TYPE USED FOR AUTOMOTIVE AUTOMATIC TRANSMISSIONS

Yasunobu Yamamoto, Chiryu; Mitsumasa Matsuo, and Atsushi Nakagawa, both of Toyota, all of Japan, assignors to Aisin Chemical Company, Limited, Aichi, Japan

Filed Jul. 6, 1978, Ser. No. 922,296

Claims priority, application Japan, Jul. 16, 1977, 52-085351; Dec. 19, 1977, 52-152750

Int. Cl.² D01F 9/16

U.S. Cl. 264—29.4 **36 Claims**

1. A method of manufacturing a paper based frictional material, comprising: forming a paper material of a desired size from a mixture comprising at least wood pulp; soaking said paper material in a binder agent, and then drying the soaked material; and heating said dried paper product at 120°–500° C. for 0.5–20 hours to carbonize a portion of said wood pulp under conditions in which oxygen is substantially eliminated from contact with said paper material by removing air over said product by reducing the atmospheric pressure, by covering a material with a liquid or by maintaining said material under inert atmosphere, so that a material is obtained whose frictional characteristics are such that the material is useful as a clutch facing in automatic transmissions.

4,226,817

PURGING FOR SPINNING HYDRATED ACRYLIC POLYMER MELT

Edwin J. Siegman, Pensacola, Fla., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 21, 1979, Ser. No. 12,977

Int. Cl.² B28B 7/04

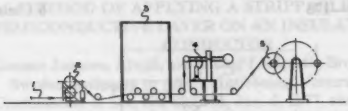
U.S. Cl. 264—39 **5 Claims**

1. In the process of melt-spinning acrylonitrile polymer fiber which comprises furnishing a composition of acrylonitrile polymer and water in solid form to a compacting zone, converting said polymer and water composition to a homogeneous single-phase fusion melt while in said compacting zone, and extruding the resulting fusion melt through a spinnerette assembly, the improvement which comprises adding a purge composition prior to or subsequent to said furnishing of said polymer-water composition, said purge composition comprising from about 65 to 85 weight percent of an acrylonitrile copolymer, from about 15 to 35 weight percent of ethylene carbonate, and from 0 to about 5 weight percent of water, said purge being in solid state at a temperature below about 40° C. and atmospheric pressure and having a melt viscosity which is about equal to or greater than that of the fusion melt to be purged or extruded at the melting temperature of said fusion melt, the quantity of purge composition employed being sufficient to fill the processing areas of said compacting zone and said spinnerette assembly.

4,226,818
PRODUCTION OF POLYVINYLBUTYRAL SHEET ROLLS

Van Pelt Brower, Wilbraham; Robert A. Esposito, Granby, and Thomas E. Soar, Holyoke, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 8, 1979, Ser. No. 47,519
Int. Cl.[2] B29C *25/00*
U.S. Cl. 264—40.1 7 Claims



6. A process for the production of a roll of polyvinyl butyral interlayer sheet adapted for use in laminated glazing units which comprises seasoning a polyvinyl butyral sheet for at least ten days at from 50° to 70° C., then forwarding the seasoned sheet at a constant tension in the range of from 50 to 120 grams per linear centimeter through a tension-sensing device and thereafter winding the sheet on a core rotated at a speed that is responsive to the tension-sensing device such that the sheet is wound at the same constant tension and at a temperature of from 7° to 12° C. and stored at that temperature until used.

4,226,819
METHOD OF PRODUCING KERAMZIT

Rafik B. Oganesian, Daev pereulok, 31, kv. 15, Moscow, U.S.S.R.

Continuation of Ser. No. 727,012, Sep. 27, 1976, abandoned. This application Apr. 3, 1978, Ser. No. 892,986
Int. Cl.[2] C04B *33/04*
U.S. Cl. 264—43 4 Claims

1. A method of producing Keramzit having a bulk density of 100–830 Kg/m^3 from clay granules formed and dried at temperatures in the range of 100° to 150° C. and then treated at a temperature in the range of 200°–500° C. which comprises subjecting said granules to a two-stage calcination procedure comprising:

(a) in the first stage rapidly heating said granules from said treating temperatures to a specific first calcination temperature within the range of 800°–1150° C.;

(b) isothermally maintaining said granules at said first stage calcination temperature for from 0.5 to 10 minutes, the time and temperature of said first stage of calcination being such as to remove gaseous products from the upper layers of said granules and to form in said granule an outer oxidized zone the thickness of which depends on the duration of said heating;

(c) rapidly heating said granules in the second calcination stage to a specific second calcination temperature which is above said first calcination temperature and within the range of 1150°–1250° C.;

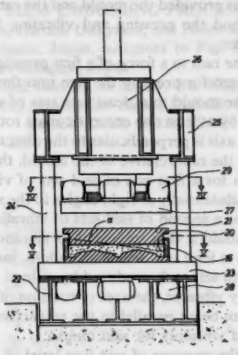
(d) isothermally maintaining said granules at said second stage calcination temperature for from 1 to 5 minutes, wherein said oxidized zone is converted to a clinker-like high strength crust and said nucleus swells; and then

(e) cooling the resultant product.

4,226,820
METHOD OF AND APPARATUS FOR FORMING AN ARTICLE FROM A MIXTURE OF A SOLIDIFYING PLASTIC MATERIAL AND A LARGE PORTION OF FILLER MATERIAL

Georg Björhaag, Amal, Sweden, assignor to Svensk Härdbetongteknik AB, Bromma, Sweden

Continuation-in-part of Ser. No. 493,125, Jul. 30, 1974, abandoned. This application Jul. 14, 1978, Ser. No. 924,672
Claims priority, application Sweden, Jul. 30, 1973, 7310463
Int. Cl.[3] B29G *1/00*; B29J *5/04*
U.S. Cl. 264—72 20 Claims



1. A method of forming an article of complicated shape from a mixture of a solidifying plastic compound and a relatively large portion of filling material, comprising introducing the mixture to a predetermined level into a mould, adapted to the shape of one side of the the article, through an opening from which the cavity of the mould is directly accessible, inserting a ram adapted to the shape of the other side of the article into said opening, placing said mould in an apparatus including power means provided to press the ram into the mould and vibrating means provided to subject the mound and the ram to vibrations, in which method the pressing and vibrating is made in the following cycle:

subjecting the ram to a force of a first pressure level by means of said power means for pressing the ram into the mould;

subjecting the mould to at least two sets of frequency-synchronous, mutually phase-offset vibrations, each set being produced by at least one vibrator, including a first set of vibrations having a first component aligned with the direction of pressure applied to the ram relative to the mould and a second component in a first direction transverse to said direction of pressure, and a second set of vibrations having a first component aligned with said direction of pressure and a second component in a second direction transverse to said direction of pressure and also crosswise to the direction of said second component of said first set of vibrations;

while said mould is thus subjected to vibrations, subjecting the ram to at least two sets of frequency-synchronous phase-offset vibrations, each set being produced by at least one vibrator, and each having a first component aligned in the said direction of pressure and a second component in a direction transverse to said direction of pressure, said sets of vibrations and the components thereof to which the ram is subjected being opposite in direction and equal in frequency, and hence opposite in phase, respectively to said sets of vibrations and the components thereof to which the mould is subjected;

maintaining the pressure of said first level of force and said vibrations until the resulting shifting of particles has distributed said mixture in said mould cavity in a mass adapted to the complicated shape of the article, and

subjecting the ram to a force of a second and increased pressure level while continuing said vibrations, so that the mixture becomes compressed in its distributed form.

14. A method of forming an article of complicated shape from a mixture of solidifying plastic compound and a relatively large portion of filling material, comprising introducing the mixture to a predetermined level into a mould, adapted to the shape of one side of the article, through an opening from which the cavity of the mould is directly accessible, inserting a ram adapted to the shape of the other side of the article into said opening, placing said mould in an apparatus including power means provided to press down the ram into the mould and vibrating means provided the mould and the ram to vibrations, in which method the pressing and vibrating is made in the following cycle:

subjecting the ram to a force of a first pressure level by said power means for pressing the ram into the mould;

subjecting the mould to at least two sets of vibrations each produced by at least one eccentric-mass rotary vibrator of which the axis is perpendicular to the direction of pressure applied to the ram relative to the mould, the vibrator axis of rotation for a first one of said sets of vibrations being oriented substantially at right angles to the vibrator axis of rotation for a second of said sets of vibrations,

while said mould is thus subjected to vibrations, subjecting the ram to at least two sets of vibrations, including a third and a fourth set, each produced by at least one eccentric-mass rotary vibrator, the axes of rotation of said vibrators for said ram being parallel to the respective axes of rotation of said vibrators for said mould;

maintaining the pressure of said first level of force and said vibrations until the resulting shifting of particles has distributed said mixture in said mould cavity in a mass adapted to the complicated shape of the article, and

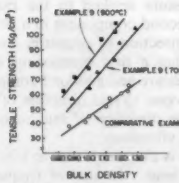
subjecting the ram to a force of a second and increased pressure level while continuing said vibrations, so that the mixture becomes compressed in its distributed form.

4,226,821

PROCESS FOR PRODUCING FLEXIBLE GRAPHITE

Toshikatsu Ishikawa, Tokyo; Kazuhisa Kawazumi, Yokohama; Hiroshi Yamazoe, Yokohama, and Isao Sugiura, Yokohama, all of Japan, assignors to Nippon Carbon Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1978, Ser. No. 967,804
Claims priority, application Japan, Dec. 28, 1977, 52/160547
Int. Cl.³ B32B *3/26*; C04B *41/28*
U.S. Cl. 264—134 **10 Claims**



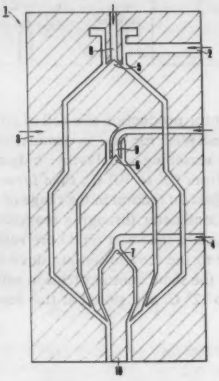
1. A process for producing flexible graphite comprising incorporating particulate expanded graphite having a c direction expansion at least 10 times as great as that of the original c direction dimension with 5–40% by weight, based on the graphite, of a member selected from the group consisting of colloidal silicas containing 10–30% by weight of SiO_2 and organo-silicon high molecular weight compounds having carbon and silicon as the skeletal components to form a mixture, drying the mixture so formed, pressure molding the dried mixture to an extent that the mixture so molded has a predetermined bulk density and then heat treating the molded mixture at 500°–2000° C. thereby to produce the flexible graphite.

4,226,822

BIAXIALLY STRETCHED FIVE-LAYER FILM AND METHOD FOR MANUFACTURE THEREOF

Shinsuke Yoshikawa; Nobuyuki Hisazumi, and Masataka Yamamoto, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 862,135, Dec. 19, 1977, Pat. No. 4,161,562.
This application Sep. 20, 1978, Ser. No. 944,167
Claims priority, application Japan, Dec. 29, 1976, 51/159068
Int. Cl.² B32B *31/30*
U.S. Cl. 264—173 **8 Claims**



1. A method for the manufacture of a biaxially stretched five-layer laminate resin film which comprises use of a three-layer tubular molding die provided with three resin flow paths respectively for an outermost resin layer, an intermediate resin layer and an innermost resin layer, each of said three resin flow paths being provided with a torpedo which serves in modifying a solid resin flow into a tubular flow, characterized in that,

(a) two resin-feed ducts are installed respectively into the path for the outermost resin layer and in the path for the intermediate resin layer so as to have each of the end portions of the installed resin-feed ducts inserted into each of said paths for the outermost and the intermediate resin layers with each of said paths and extended short of direct contact with each of said torpedoes;

(b) an olefine polymer resin selected from the group consisting of an ionomer, a homopolymer and a copolymer of an olefine and a mixture of said homopolymer and said copolymer of an olefin is fed from outside of said die in a melt state and is extruded through said resin flow path for said outermost resin layer; a copolymer of vinylidene chloride is fed from outside of said die in a melt state and is extruded through said resin flow path for said intermediate resin layer; an ionomer is fed from outside of said die in a melt state and is extruded through said resin flow path for said innermost resin layer and, at the same time, a copolymer of ethylene having a crystal-melting point of 5° to 30° C. lower than that of said ionomer is fed from outside of said die and is extruded through both of said feed ducts, thereby producing a five-layered laminate resin tube at the outlet of said die;

(c) the resultant five-layered laminate resin tube is rapidly cooled by quenching so as to cause said copolymer of vinylidene chloride in said laminate tube to assume an amorphous state; and

(d) the thus quenched laminate resin tube is biaxially stretched at a temperature lower than the crystal-melting point of said olefine polymer resin in said outmost resin layer and that of said ionomer in said innermost resin layer and at least 4° C. higher than that of said copolymer of ethylene, thereby yielding a biaxially stretched five-layered laminate resin film having a first resin layer of 7 to

25μ, a second resin layer of 0.2 to 3μ, a third resin layer of 5 to 15μ, a fourth resin layer of 0.2 to 3μ and a fifth resin layer of 20 to 50μ in thickness, the ratio of thickness of said first resin layer to that of said fifth resin layer being in the range of from 0.4 to 0.6 and the total thickness of said five-layered laminate resin film being in the range of from 35 to 90μ.

4,226,823

METHOD OF APPLYING A STRIPPABLE OUTER SEMICONDUCTIVE LAYER ON AN INSULATED CABLE CONDUCTOR

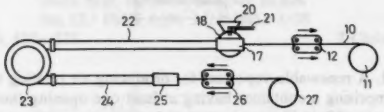
Gunnar Jansson, Älvsjö, and Gustaf Linderoth, Bromma, both of Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

Continuation of Ser. No. 803,643, Jun. 6, 1977, abandoned. This application Dec. 7, 1978, Ser. No. 967,512

Claims priority, application Sweden, Jun. 10, 1976, 7606528

Int. Cl.³ B29F *3/10*

U.S. Cl. 264—174 **11 Claims**



1. In a method of applying a strippable semiconductive layer to a cable conductor which has an insulation therearound of thermoplastic or crosslinked polyethylene by extruding thereon a polymer material comprising a copolymer of ethylene and vinyl acetate, carbon black and an organic peroxide in an extrusion machine, the improvement wherein said organic peroxide is uniformly mixed with a mixture of said copolymer and said carbon black to form said polymer material after said mixture of said copolymer and said carbon black have been supplied to said extrusion machine, and heating said polymer material after the polymer material has been extruded into said insulated cable conductor so as to cause cross-linking.

4,226,824

PROCESS FOR SPINNING MODACRYLIC FIBER HAVING HIGH RETRACTION AND REDUCED INFLAMMABILITY

Giorgio Cazzaro, Saronno; Domenico Malgeri, Magenta; Giancarlo Matera, Monza, and Antonino Cavallaro, Cesano Maderno, all of Italy, assignors to Societa Nazionale Industria Applicazioni Viscosa S.p.A., Italy

Filed May 9, 1978, Ser. No. 905,032

Claims priority, application Italy, May 13, 1977, 23504 A/77

Int. Cl.³ D01F *6/18*

U.S. Cl. 264—182 **13 Claims**

1. Process for the manufacture of modacrylic fibers having a retraction of above 35%, reduced inflammability and high glossiness, comprising the steps of:

(a) preparing a viscous spinning dope constituted by a solution, in an organic spinning solvent miscible with water, of a mixture of copolymers deriving from acrylonitrile, vinylidene chloride, at least a vinyl ester and at least an unsaturated monomer containing at least a sulphonic group, wherein the units deriving from acrylonitrile are present in an amount from 50% to 85% by weight and those derived from the vinyl ester in an amount from 3% to 6% by weight; spinning said dope in a coagulating bath constituted by a mixture of water and spinning solvent;

(b) drawing the coagulated fiber at a draw ratio from 2 to 4 in a liquid selected from the group consisting of water and mixtures of water and spinning solvent at a temperature of from 80° to 100°;

(c) subsequently drying the fiber by means of hot air at temperatures from 100° and 130° C. while leaving it free concurrently to contract to a degree of about 25% to 30%; and

(d) subsequently subjecting the fiber to a further hot drawing in air at a draw ratio from 1.5 to 3.5 at a temperature from 50° to 100° C.

4,226,825

FILM EMBOSSING PROCESS

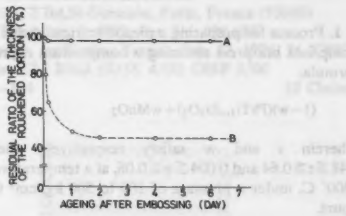
Kikuo Yamagis; Hiroshi Okuyama, and Hideo Kawaguchi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 21, 1978, Ser. No. 972,174

Claims priority, application Japan, Dec. 26, 1977, 52/156907

Int. Cl.² B29C *17/00, 25/00*

U.S. Cl. 264—235 **4 Claims**



1. A film embossing process for roughening a lateral edge of a thermo-plastic film by mechanical deformation, to produce embossed film, comprising the steps of; subjecting the lateral edge of said thermo-plastic film to an embossing process at a temperature in the range of Tg to Tg+60° C., where Tg is the glass transition temperature to produce an intermediate film and, heat treating said intermediate film for a period of time in the range of from 30 to 600 seconds at a temperature exceeding the temperature of the film embossing step by approximately 10° C. to 30° C., wherein said process alleviates wavey pleating in said embossed film.

4,226,826

METHOD FOR MANUFACTURING POLYESTER FILMS

Masahiko Motegi, Hikone; Kazuhiro Tanaka, and Saburo Fujita, both of Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Aug. 7, 1979, Ser. No. 64,375

Claims priority, application Japan, Aug. 7, 1978, 53-95415

Int. Cl.³ B29C *17/02, 25/00*

U.S. Cl. 264—235.8 **8 Claims**

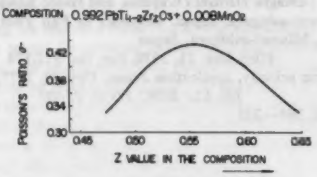
1. In a process for preparing a polyester film having an F-5 value in the TD which is above 14 kg/mm², the steps which comprise heat-setting a biaxially oriented polyester film obtained by stretching the film at a ratio of more than 2.0 in both the MD and TD, at a temperature above the MD-, TD-, and re-MD stretching temperature but below T_m (the melting point of the polyester) −10° C., then restretching the film at a ratio of 1.05–2.5 in MD and then at a ratio of 1.05–2.5 in TD at a temperature between T_g (glass transition temperature of the polyester) +10° C. and T_m−40° C., and reheat-setting the film at a temperature between T_g+50° C. and T_m−10° C.

4,226,827

METHOD FOR PREPARING PIEZOELECTRIC CERAMICS

Masamitsu Nishida, Osaka; Syunichiro Kawashima, Nishinomiya; Ichiro Ueda, Osaka, and Hiromu Ouchi, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 20, 1979, Ser. No. 67,681
Claims priority, application Japan, Aug. 23, 1978, 53-103023; Aug. 23, 1978, 53-103024
Int. Cl.[2] C04B *35/36*
U.S. Cl. 264—332 4 Claims



1. Process for preparing a piezoelectric ceramic body which comprises hot-press sintering a composition expressed by the formula:

$$(1-w)(PbTi_{1-z}Zr_zO_3)+wMnO_2$$

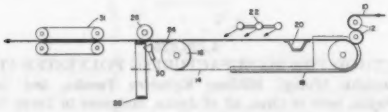
wherein z and w satisfy respectively the formulae: $0.48 \leqq z \leqq 0.64$ and $0.004 \leqq w \leqq 0.06$, at a temperature of 1050° to 1300° C. under a pressure of 100 to 500 kg/cm^2 for 0.5 to 24 hours.

4,226,828

PROCESS FOR PRODUCING A RETICULATED WEB NET

John N. Hall, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 20, 1978, Ser. No. 971,594
Int. Cl.[2] B29C *17/10*; B29D *7/02*; B29C *17/04*
U.S. Cl. 264—555 3 Claims



1. A process for forming a reticulated web net comprising:
providing a film of thermoplastic polymeric material;
heating said film to a temperature suitable for thermoforming;
then placing said film in contact with a perforated surface;
then subjecting said film to a pressure differential to force portions of the film into the perforations of said perforated surface thus forming pips;
then cooling said film to harden the film;
then stripping the film from the perforated surface;
then skiving off the pips substantially parallel to the surface of said film; and
then biaxially stretching and orienting said film into a reticulated web net.

4,226,829

RENEWABLE VAPORIZER FOR AIR TREATMENT AND THE LIKE

Andrew Mike, 141 Deauville Ct., Fort Mitchell, Ky. 41017

Filed Oct. 4, 1978, Ser. No. 948,548
Int. Cl.[3] A01M *1/20*; A61L *9/01, 9/12*
U.S. Cl. 422—123 14 Claims

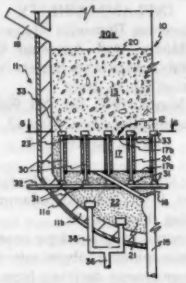
1. A renewable vaporizer for producing air treating vapors comprising a container having at least one opening therein, a supply of fluid-like carrier material carrying a vapor producing treating agent contained within said container; and a porous membrane covering said opening, said fluid-like material being in contact with said membrane to transfer a part of said treating agent thereto when said container is positioned in a first orientation, said membrane operating to bring a part at least of said transferred treating agent into contact with the outer surface of said membrane for producing air treating vapors.

4,226,830

FLUIDIZED BED REACTOR

William L. Davis, Bakersfield, Calif., assignor to Hicap Engineering & Development Corporation, Salt Lake City, Utah

Filed Aug. 28, 1978, Ser. No. 937,512
Int. Cl.[2] B01J *8/18, 8/32, 8/44*
U.S. Cl. 422—143 16 Claims



1. A fluidized bed reactor comprising,
a cylindrical reactor shell;
means for passing feed solids into the reactor shell and for withdrawing product solids therefrom;
a windbox structure that consists of a plurality of spaced apart independant sections arranged in the same horizontal plane, and each section includes an upper surface spaced apart from and above a bottom plate for arrangement in said cylindrical reactor shell, said bottom plate spaced from the bottom of said reactor shell thereby forming a reactor chamber above said upper surface and a plenum volume below said bottom plate;

means for supporting said windbox structures within said cylindrical shell;

a plurality of plenum pipe means open therethrough for passing of unfluidized feed solids from said reactor chamber into said plenum volume, said plenum pipe means secured at an outer surface thereof to both the upper surface and bottom plate of said windbox structures;

tuyere array means connected to said windbox structure for passing fluidizing gas therethrough to said reactor chamber through to said reactor chamber and into a bed of feed solids therein;

conduit means connected to each said windbox structure for supplying fluidizing gas thereto; and

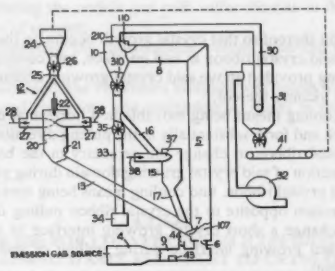
exhaust means connecting into said cylindrical reactor shell for exhausting gas passed from said fluidized bed.

4,226,831

APPARATUS FOR REMOVAL OF SULFUR FROM GAS

Louis R. Dilworth, Greendale, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 16, 1979, Ser. No. 21,026
Int. Cl.³ F01N *3/10, 3/15;* B01J *8/08*
U.S. Cl. 422—173 **7 Claims**



1. Apparatus for removing pollutant gases such as sulfur dioxide from emission gas to be released into the atmosphere, said apparatus comprising:

A. a mixing vessel (5) having

(1) an outlet (8),

(2) an inlet zone (107) spaced from said outlet (8), and

(3) inlet means (6, 7) communicating with the inlet zone (107) for admitting emission gas and pollutant adsorbing particulate medium into the inlet zone (107), with said inlet means being arranged to produce turbulent flow of the emission gas and the medium in the vessel (5);

B. pollutant containing emission gas delivery means (9) connected to the inlet means (at 6) for supplying emission gas to the inlet zone (107) of vessel (5);

C. pollutant adsorbing particulate medium feed means (25, 12, 13) connected to the inlet means (at 7) for supplying fresh pollutant adsorbing particulate medium to the inlet zone (107) of vessel (5);

D. a gas cleaner (10) for separating particulate medium from emission gas, and having

(1) an inlet (110) connected with the outlet (8) of the mixing vessel (5),

(2) a gas outlet (210), and

(3) a particulate medium outlet (310);

E. suction means (32) connected to the gas outlet (210) of the gas cleaner (10) for drawing emission gas and medium from the inlet zone (107) through the vessel (5) and the vessel outlet (8) into the gas cleaner (10);

F. recirculation means (16, 17) connecting the particulate medium outlet (310) of the gas cleaner (10) to the inlet zone (107) of the mixing vessel (5) to thereby define a particulate medium recirculating loop structure (16, 17, 5, 8, 10, 16);

G. particulate medium discharge means (33, 34, 35) connected to the loop structure (16, 17, 5, 8, 10, 16) downstream of the particulate medium outlet (310) of the gas cleaner (10) and upstream of the inlet zone (107) of the vessel (5); and

H. the medium feed means (25, 12, 13) including

(1) a furnace (12) in which fresh particulate medium is heated to a temperature high enough to cause the medium to chemically react with and adsorb pollutant gas from the emission gas; and

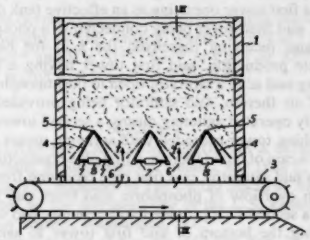
(2) medium transporting means (13) connecting the furnace (12) to the inlet zone (107) of the mixing vessel (5) to deliver fresh medium into said inlet zone (107) while the fresh medium is at substantially said temperature.

4,226,832

DEVICES FOR FERMENTATION OF ORGANIC REFUSE AND SLURRIES

Didier Roumens, 3 Bd.St-Germain, Paris, France (75005)

Filed Sep. 8, 1977, Ser. No. 831,653
Claims priority, application France, Sep. 17, 1976, 76 27970
Int. Cl.³ B01J *19/18, 4/00;* C05F *3/06*
U.S. Cl. 422—184 **13 Claims**



1. A silo for producing compost from organic material subjected to aerobic fermentation comprising

a container having closed sides, an opening in the top through which the organic material is introduced and gas produced by the fermentation process escapes, and an opening in the bottom through which the compost exits, means for supplying gas into the lower portion of the container to traverse upwardly in the container through substantially all of the material being fermented to aid in the fermentation, the interior of the container from the top to a lower portion thereof which is adjacent the bottom being unobstructed so that the organic material will fall of its own weight from the container top to said lower portion as the fermentation process takes place, the gas supplied into the container and gases produced during fermentation moving upwardly through the material being fermented from said lower portion to the opening at the top and exit therefrom while said material is simultaneously moving downward in the opposite direction, and

means at said lower portion of said container for controlling both the rate at which the material moves downwardly in and exits from the container and the volume of the gas supplied to the material in the container, said controlling means comprising a plurality of elements, means for mounting said elements rotatably about generally parallel horizontal axes, the amount of rotation of said elements determining the spacing therebetween and the rate at which the moves downwardly in and exits from the container.

4,226,833

APPARATUS FOR OBTAINING BIAMMONIUM PHOSPHATE

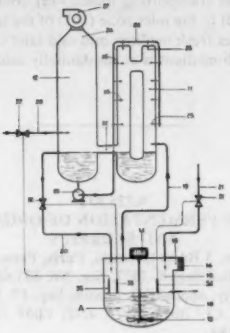
Anacleto C. Mainardi, Cologna Veneta, Italy, assignor to Kappa Fertilizzanti S.p.A., Via Quari Destra, Italy

Filed Mar. 31, 1978, Ser. No. 892,150

Claims priority, application Italy, Apr. 6, 1977, 48864 A/77

Int. Cl.[2] B01J *1/00;* **C01B** *25/26*

U.S. Cl. 422—189 **4 Claims**



1. Apparatus for obtaining biammonium phosphate, comprising: a first tower operating as an effective tank of phosphoric acid, said first tower being connected to a phosphoric acid source and receiving therefrom the acid for biammonium phosphate production, said first tower having a bottom for collecting said acid; a saturator open to the atmosphere for free entry of air thereto, said saturator being provided with mechanically operated agitating means; a second tower operating as a washing tower provided with spraying means adapted to produce a rain of liquid therein; a first pipe connecting said first tower to said saturator, said first pipe receiving from said first tower an overflow of phosphoric acid from said first tower bottom; a second pipe provided with a pump, said second pipe connecting the bottom of said first tower to said spraying means of said second tower, in order to produce a rain of phosphoric acid therein; a third pipe connecting an upper portion of said saturator to an upper portion of said second tower; a fourth pipe with larger cross section than said first, second and third pipes connecting a lower portion of said first tower to a lower portion of said second tower; a fifth pipe connecting said saturator to a tank feeding ammoniacal solution to said saturator; an overflow pipe for exit from the saturator of biammonium phosphate solution produced within the saturator; and mechanical means adapted to produce a strong air draft from the atmosphere into said saturator and thence into said second tower via said third pipe and thence to said first tower via said fourth pipe and from said first tower into the atmosphere.

4,226,834

LATERAL PULLING GROWTH OF CRYSTAL RIBBONS AND APPARATUS THEREFOR

Taro Shudo, Tokyo; Bosshi Kudo, Nagareyama, and Yasushi Tamai, Noda, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha and Japan Silicon Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 739,632, Nov. 8, 1976, abandoned. This application Dec. 27, 1977, Ser. No. 864,745

Claims priority, application Japan, Nov. 14, 1975, 50-136841

Int. Cl.[2] B01J *17/18*

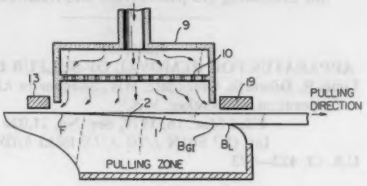
U.S. Cl. 422—249 **3 Claims**

1. Apparatus for growing a thin single crystal ribbon at high speed by continuously substantially laterally pulling a crystal ribbon of a substance from a melt surface of said substance, a crystal growing interface being formed between said pulled crystal ribbon and the surface of the melt in contact therewith, comprising:

means for containing said substance;

means for heating and melting said substance and producing said melt surface on the upper surface of said substance;

gas cooling means provided with at least one nozzle for blowing a gaseous cooling medium over at least a portion of the upper surface of the melt and over the upper surface of at least a portion of the crystal ribbon above said interface, and defining a crystal growing domain on the surface of the melt in contact with said interface, said cooling means controlling the temperature of the melt surrounding said crystal growing domain to above the melting



point thereof so that crystal growth occurs on the surface of said crystal ribbon at said interface, said cooling means being provided above said crystal growing domain and in the vicinity thereof;

said cooling means being movable in a horizontal direction back and forth substantially in the pulling direction of said crystal ribbon to change the geometry in the horizontal direction of said crystal growing domain during pulling of said crystal ribbon, said cooling means being movable in a direction opposite to the crystal ribbon pulling direction to change a short crystal growing interface to a longer crystal growing interface during pulling of said crystal ribbon.

4,226,835

FLUIDIZED-BED SEAL

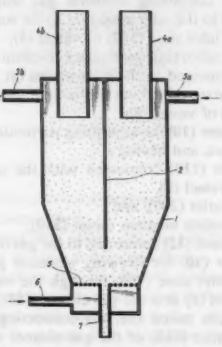
Jaroslav Beranek, Prague; Dobromil Pihert, and Oleg Engel, both of Kladno, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Jul. 12, 1979, Ser. No. 56,846

Claims priority, application Czechoslovakia, Jul. 20, 1978, 4866-78

Int. Cl.[2] B01J *8/44;* **F26B** *25/00, 17/10;* **B65G** *65/00*

U.S. Cl. 422—310 **4 Claims**



1. A fluidized-bed seal comprising: a vertical vessel divided into two parts by a vertical baffle, said vessel being closed at the upper end and having a fluidization grid situated at the

bottom end thereof for introduction of fluidizing medium, said baffle extending from the closed upper end of said vessel to a location above and vertically spaced from said grid, a pair of vertical pipes each of which enters the vessel through the top thereof with said pair of vertical pipes being located on opposite sides of the baffle and extending into an upper part of the vessel, for the respective inlet and outlet of particles, and a pair of secondary fluid inlet pipes, each of said pair of secondary fluid inlet pipes being located to communicate with the vessel at a different one of said two parts of said vessel.

4,226,836

METHOD FOR SEPARATING MOLYBDENUM VALUES FROM SEA NODULES

Harry Zeitlin, Honolulu, Hi., and Quintus Fernando, Tucson, Ariz., assignors to University Patents, Inc., Norwalk, Conn.

Filed Jan. 3, 1979, Ser. No. 675

Int. Cl.[2] C01G *3/10, 45/10, 39/00, 51/10*

U.S. Cl. 423—41 **8 Claims**

1. A process for recovery of molybdenum values from ferromanganese sea nodule ores which comprises the steps of:

(a) sulfating the nodule ore with sulfur dioxide in the presence of oxygen;

(b) volatilizing the molybdenum values from the sulfated ore; and

(c) condensing the volatilized molybdenum values from step (b) and collecting said molybdenum values in their thus condensed form.

4,226,837

PROCESS FOR CONVERTING SILICON DIOXIDE CONTAINING WASTE FLUE DUST TO CRYSTALLINE ZEOLITIC MOLECULAR SIEVES OF TYPE Y WITH A FAUJASITE STRUCTURE

Karl Achenbach, Frankfurt, and Günter Türk, Hanau, both of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Nov. 8, 1977, Ser. No. 849,612

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1976, 2651446

Int. Cl.[3] C01B *33/28*

U.S. Cl. 423—118 **23 Claims**

1. A process for the preparation of crystalline zeolite molecular sieves of Type Y from waste flue dust containing silicon dioxide obtained from the production of silicon metal or a silicon alloy or is a mixture of flue dusts from the production of silicon metal and silicon alloy comprising (1) dissolving the flue dust in alkali metal hydroxide solution with the formation of alkali metal silicate solution having the mole ratio SiO_2:-Me^I_2O in the range of 4.0:1 to 5.0:1 at a temperature of 60°–110° C.; (2) purifying the thus obtained alkali metal silicate solution from organic constituents by treatment with activated carbon or an oxidizing agent or a mixture of activated carbon and oxidizing agent and separating the non-decomposable residue from the solution; and, (3) reacting alkali metal aluminate solution present at room temperature with the purified alkali metal silicate solution with a mole ratio SiO_2:Me^I_2O of 4.0:1 to 5.0:1 obtained by steps (1) and (2) and subsequently crystallizing the reaction mixture (SiO_2:Al_2O_3=4–7:1, Me^I_2O:SiO_2=0.4–0.7, H_2O:Me^I_2O=30–50:1) at a temperaure of 75°–100° C. with stirring for a period of 8–48 hours, subsequently filtering to remove the product from the mother liquor, washing and drying to recover a zeolite molecular sieve of Type Y with a Faujasite structure having a degree of whiteness according to BERGER at 460μ in the range of 90–95%.

4,226,838

PROCESS FOR ACCELERATING THE DIGESTION AND SEDIMENTATION STEPS ON THE BAYER ALUMINA PROCESS

József Boros, Ajka; Zsolt Csillag, Budapest; Tibor Ferenczi, Tatabánya; Tibor Kálmán, Budapest; László Lengyel; József Mátyási, both of Almásfüzito; Ferenc Orbán; Károly Solymár, both of Budapest; Béla Tóth, Ajka; Lajos Toth; István Vörös, both of Budapest; Kálmán Wentzely, Almasfüzito; János Zámbó, Budapest, and Jozsef Zöldi, Tatabanya, all of Hungary, assignors to Almasfüzitoi Timföldgyár, Almisfüzito, Hungary

Continuation-in-part of Ser. No. 834,273, Sep. 19, 1977, abandoned. This application Jan. 24, 1979, Ser. No. 5,996

Claims priority, application Hungary, Dec. 7, 1976, AU 368

Int. Cl.[2] C01F *7/06*

U.S. Cl. 423—121 **7 Claims**

1. An improved process for accelerating the digestion procedure of bauxite containing diaspore or goethite processed according to the Bayer technology at a temperature of from 180°–300° C. with the aid of an aluminate liquor having a sodium oxide concentration of from 80–300 g/liter for increasing the alumina yield, for converting goethite into hematite and for recrystallizing the resulting finely dispersed hematite wherein the improvement comprises carrying out the digestion with the addition of a hydrogarnet catalyst having a composition of

$$A_3B_2/SiO_4/_{3-x}/(OH)_4/_x$$

in an amount corresponding to 5–20% by weight calculated on the dried weight of the bauxite where A is Ca^{2+}, Mg^{2+}, Mn^{2+} or Fe^{2+} and B is Al^{3+}, Fe^{3+} or Cr^{3+} or $Al^{3+}yFe^{3+}$, in which y is 0.05 to 0.5, and x is from 0 to 3.

4,226,839

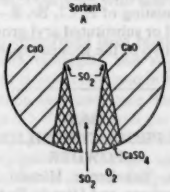
ACTIVATION OF CALCIUM OXIDE AS A SORBENT

Eoin P. O'Neill, Mount Merrion, Ireland, and Dale L. Keairns, Pittsburgh, Pa., assignors to The United States of America as represented by the Administrator of the U.S. Environmental Protection Agency, Washington, D.C.

Continuation-in-part of Ser. No. 553,199, Feb. 26, 1975, abandoned. This application Jul. 21, 1978, Ser. No. 926,925

Int. Cl.[3] C01F *11/06*

U.S. Cl. 423—177 **10 Claims**



1. A method for producing calcium oxide of increased sorbent capacity with respect to sulfur dioxide which comprises: heating stones of particle size 400–1000 microns containing calcium carbonate, at about 900° C. for a time sufficient to effect decomposition of the $CaCO_3$ to CaO, in a calcination delaying atmosphere containing carbon dioxide where the partial pressure of the carbon dioxide is greater than 40 percent and up to 85 percent the equilibrium partial pressure of carbon dioxide over calcium carbonate at the reaction temperature, to cause a back pressure of CO_2 sufficient to convert initially formed fine pores of CaO to coalesce into larger pores.

6. A method of producing calcium oxide of increased sorbent capacity with respect to sulfur dioxide from stones of

400–2000 microns particle size containing calcium carbonate and magnesium carbonate, which comprises:

a. heating said stones at 700° up to 900° C. in an atmosphere in which the partial pressure of carbon dioxide is greater than the equilibrium partial pressure of CO_2 over $CaCO_3$ at the reaction temperature to calcine the magnesium fraction of the stones; and,

b. additionally heating said stones in an atmosphere containing an amount sufficient of carbon dioxide to delay calcination and for a time sufficient to cause sufficient CO_2 back pressure to produce large mouthed pores, at a temperature greater than that in step (a) in the range 900°–950° C. for a time sufficient to effect decomposition of the $CaCO_3$ to CaO, the CO_2 partial pressure being greater than 40% but not exceeding 85% of the equilibrium partial pressure of CO_2 over $CaCO_3$ at the reaction temperature.

4,226,840

PROCESS FOR THE POLYMERIZATION OF CYCLIC POLYHALOPHOSPHAZENES USING A CATALYST COMPOSITION OF BORON TRIHALIDE AND OXYGENATED PHOSPHORUS COMPOUNDS

John W. Fieldhouse, Mogadore, and Daniel F. Graves, Clinton, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sep. 19, 1979, Ser. No. 77,245

Int. Cl.³ C01B *25/10*

U.S. Cl. 423—300 **11 Claims**

1. A method of preparing a substantially gel free linear polydihalophosphazene polymer represented by the formula $(NPX_2)_n$ in which X is a halogen selected from the group consisting of F, Cl and Br and n is from 20 to 50,000; said method comprising polymerizing a cyclohalophosphazene represented by the formula $(NPX_2)_3$ in which X is as defined above at a temperature of from 180° to 270° C. in the presence of a catalytically effective amount of a catalyst which comprises the reaction product of a boron compound of the formula BX_3 in which X is F, Cl or Br with an oxygenated phosphorus compound of the formula

wherein Y and Y' may be the same or different and are selected from the group consisting of F, Cl, Br, R—, RO— and RS—, wherein R is an aryl or substituted aryl group with the proviso that not more than two of the groups represented by Y and Y' may be R— groups.

4,226,841

METHOD OF PRODUCING SILICON CARBIDE POWDER

Katsutoshi Komeya, Yokohama; Hiroshi Inoue, Kawaguchi; Haruo Kudo, Kamakura, and Hiroshi Endo, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 7, 1979, Ser. No. 18,264

Claims priority, application Japan, Mar. 10, 1978, 53/26597

Int. Cl.² C01B *31/36*

U.S. Cl. 423—345 **5 Claims**

1. A method of producing a silicon carbide powder, comprising, forming a powerdery mixture consisting of 1 part by weight of silica powder or a compound forming silica powder at the baking temperature employed, 0.5 to 4 parts by weight of carbon powder or a compound forming carbon powder at said baking temperature, and 0.05 to 1 part by weight of silicon carbide powder, the amounts of the silica powder-forming compound, and the carbon powder-forming compound being such that the amounts of the formed silica and carbon powders are equal to those specified above and baking said mixture at 1350° C. to 1850° C. under a non-oxidizing atmosphere selected from the group consisting of carbon monoxide, argon and hydrogen to produce a silicon carbide powder consisting of fine particles of uniform size and shape.

3. A method of producing a silicon carbide powder, comprising forming a powdery mixture consisting of 1 part by weight of silica powder or a compound forming silica powder at the baking temperature employed, 0.5 to 4 parts by weight of carbon powder or a compound forming carbon powder at said baking temperature, and 0.05 to 1 part by weight of silicon carbide powder, the amounts of the silica powder-forming compound, and the carbon powder-forming compound being such that the amounts of the formed silica and carbon powders are equal to those specified above and baking said mixture at a temperature exceeding 1,550° C. under a non-oxidizing atmosphere selected from the group consisting of nitrogen and ammonia to produce a silicon carbide powder consisting of fine particles of uniform size and shape.

4,226,842

PREPARATION OF CRYSTALLINE CRYOLITE

Friedrich Lunzer, Ottensheim, and Werner Kepplinger, Linz, both of Austria, assignors to Chemie Linz Aktiengesellschaft, Austria

Filed Jul. 11, 1979, Ser. No. 56,496

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1978, 2831095

Int. Cl.³ C01F *7/50*

U.S. Cl. 423—465 **3 Claims**

1. In a process for the preparation of crystalline cryolite having a molar ratio Na:Al of 2.9:1 to 3.0:1 and a maximum adsorbed water content of 8% by weight, by reacting an aqueous solution of aluminum fluoride with at least a stoichiometric amount of an aqueous solution of sodium fluoride whilst heating and stirring in the presence of cryolite seed crystals, separating off the product which has crystallized out and calcining it, the improvement which comprises using the sodium fluoride in an amount of 3.2 to 3.5 moles of sodium per mole of aluminum, the aluminum fluoride concentration being 15 to 250 g./l., the concentration of the sodium fluoride solution is 30 to 42 g./l. and mixing the two solutions with one another at a temperature within the range of 85° to 100° C. in the course of 0.5 to 3 hours, the pH value of the reaction mixture being maintained at from 5 to 8.

4,226,843

PROCESS AND APPARATUS FOR PRODUCTION OF SPHERICAL GRAIN FERRITE POWDER

Yasuo Watanabe; Seizi Isoyama, both of Okayama, and Yoshikazu Yamamichi, Tokyo, all of Japan, assignors to Dowa Mining Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 823,345, Sep. 10, 1977, abandoned. This application Mar. 30, 1979, Ser. No. 25,605

Int. Cl.³ C01G *49/00*

U.S. Cl. 423—594 **17 Claims**

1. A process for the production of spherical grain ferrite powder which comprises the steps of:

suspending impalpable powder of (1) pre-formed ferrite powder or (2) ferrite-forming material, in methyl alcohol to form a suspension consisting of said impalpable powder in said alcohol,

said ferrite-forming material being selected from the group consisting of the oxides, hydroxides and carbonates of (i) iron and (ii) at least one ferrite-forming metal element M selected from the group consisting of Mn, Ni, Zn, Co, Mg, Cu, Ba and Sr, and wherein said pre-formed ferrite powders have the formula $MO.Fe_2O_3$;

spraying said suspension into a high temperature zone at a temperature of from about 1200° to about 1300° C.;

whereby granulation, and ferrite formation when said impalpable powder is said ferrite-forming material, and sintering of said impalpable powder occurs while they are in

said high temperature zone to form spherical ferrite particles with at least 80% of said spherical particles being of a size between 30 and 250 microns.

4,226,844

METHOD OF THERMALLY SPLITTING HYDRATE OF ALUMINUM CHLORIDE

Lothar Reh, Bergen-Enkheim; Ludolf Plass, Kronberg, both of Fed. Rep. of Germany; Philippe Marchessaux, Aix en Provence, France, and Raman Sood, Kingston, Canada, assignors to Aluminum Pechiney, Lyon, France

Filed Feb. 5, 1979, Ser. No. 9,115

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1978, 28059065

Int. Cl.[3] C01F *7/30*

U.S. Cl. 423—625 15 Claims

1. A method of thermally splitting hydrate of aluminum chloride to form aluminum oxide using a splitting zone, a separate turbulent zone, and a separate residence zone and a cooling zone comprising:

(1) feeding the hydrate of aluminum chloride into the splitting zone;

(2) fluidizing the hydrate of aluminum chloride while in the splitting zone by the introduction of a fluidizing gas;

(3) heating the fluidized hydrate of aluminum chloride in the splitting zone partially to split the hydrate of aluminum chloride while in the splitting zone;

(4) cycling partially split aluminum chloride from the splitting zone to the turbulent zone;

(5) fluidizing the solids in the turbulent zone by introduction of gas from the cooling zone to the lower portion of the turbulent zone;

(6) heating the fluidized solids in the turbulent zone to advance the splitting reaction;

(7) cycling the heated solids from the turbulent zone to the residence zone for further completion of the splitting of the hydrate of aluminum chloride to aluminum oxide;

(8) recycling a portion of the solids from the residence zone to the turbulent zone for admixture with the partially split aluminum chloride from the splitting zone;

(9) passing the remainder of the solids from the residence zone to the cooling zone for passage in heat exchange relation with fluidizing gas to yield a preheated gas fed to the turbulent zone and a cooled aluminum oxide as product; and

(10) recycling a portion of the solids from the turbulent zone to the splitting zone for supply of heat to the splitting zone and for admixture with the hydrate of aluminum chloride introduced into the splitting zone.

4,226,845

WATER GAS SHIFT REACTION AND IN THE HYDROFORMYLATION AND HYDROHYDROXYFORMYLATION REACTIONS

Richard M. Laine, Mountain View, Calif., assignor to S R I International, Menlo Park, Calif.

Filed Dec. 6, 1978, Ser. No. 967,028

Int. Cl.[3] C01B *1/02, 2/06;* C07C *45/08, 29/16*

U.S. Cl. 423—655 8 Claims

1. In the production of hydrogen and carbon dioxide by the water gas shift reaction, and in the hydroformylation and hydrohydroxymethylation of olefins by reaction of the olefins with carbon monoxide and hydrogen or water and wherein a homogeneous catalyst in the form of a solution of a catalyst in a solvent is used, the improvement which comprises employing a mixed ruthenium carbonyl/iron carbonyl as a catalyst.

4,226,846

ALBUMIN MICROAGGREGATES FOR RADIOACTIVE SCANNING OF RETICULOENDOTHELIAL SYSTEMS

Eugene L. Saklad, Sudbury, Mass., assignor to New England Nuclear Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 783,633, Apr. 1, 1977, Pat. No. 4,094,965. This application Apr. 20, 1978, Ser. No. 898,292

Int. Cl.[2] A61K *29/00, 43/00;* C07G *7/00*

U.S. Cl. 424—1 65 Claims

64. A method for making an agent for labelling with Tc-99m for radioactive imaging, said method comprising microaggregating albumin in the presence of a reducing metal, at a pH between 3.5 and 9.5 but at a pH away from the apparent isoelectric point of said albumin.

4,226,847

LATEX POLYMER SENSITIZED WITH STEROID-SERUM ALBUMIN CONJUGATE, PREPARATION AND TEST THEREWITH

Katsuhiro Ogasa, Yokohama; Morio Kuboyama, Tokyo; Minoru Saito, Komae; Tsutomu Kudo, Kawasaki; Yoshitsugu Harada, Yokohama; Akio Kawashiri, Fujimi, and Eiji Takahashi, Tokyo, all of Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

Filed Jun. 20, 1978, Ser. No. 917,254

Claims priority, application Japan, Jun. 21, 1977, 52/72775

Int. Cl.[2] A61K *39/00, 31/74;* G01N *31/00, 33/16*

U.S. Cl. 424—12 16 Claims

1. A method for preparation of a latex reagent containing latex particles sensitized with a steroid-serum albumin conjugate and suitable for immunochumical detection of steroid contained in human body fluid or excreted fluid, which comprises

preparing steroid-serum albumin conjugate by reacting a steroid with a serum albumin in a ratio between 0.5 mole/-mole serum albumin–7.0 mole/mole serum albumin, and

preparing sensitized latex particles by sensitizing immunologically inert latex particles with said steroid-serum albumin conjugate.

8. A latex reagent comprising latex particles sensitized with steroid-serum albumin conjugate and suitable for immunochemical detection of steroid contained in human body fluid or excreted fluid, wherein said conjugate has a steroid bonding number in the range 0.5–7.0 molecules per molecule of serum albumin, and said latex particles are sensitized with an effective amount of said conjugate to avoid non-specific agglutination but to cause agglutination due to antigen-antibody reaction between said latex reagent and the antibody for which the steroid to be detected may act as a hapten.

14. In a method for the immunochemical detection of a steroid compound and/or metabolites thereof present in human body fluid or excreted fluid by forming a conjugate of a steroid and a protein material, forming sensitized latex particles by absorbing said conjugate on latex particles, obtaining an antiserum or antibody by injecting an animal with said conjugate and thereafter separating said antiserum or antibody from the blood of said animal and determining the presence of said steroid compound in a sample of body fluid by an agglutination reaction in the presence of said antiserum or antibody and said sensitized latex particles, the improvement comprising:

increasing the sensitivity of said method by employing a conjugate having a steroid to serum albumin mole ratio ranging from 0.5 to 7.0.

4,226,848

METHOD AND PREPARATION FOR ADMINISTRATION TO THE MUCOSA OF THE ORAL OR NASAL CAVITY

Tsuneji Nagai, Chofu; Yoshiharu Machida, Kawasaki; Yoshiki Suzuki, and Hiroshi Ikura, both of Hino, all of Japan, assignors to Teijin Limited, Japan

Filed Mar. 2, 1979, Ser. No. 17,059
Int. Cl.[2] A61K *9/02, 9/14, 9/22*
U.S. Cl. 424—19 9 Claims

1. A method for administering a medicament which comprises adhering to the mucosa of the nasal cavity a pharmaceutical preparation comprising

(a) a water-swellable and mucosa-adhesive polymeric matrix comprising about 50 to about 95% by weight of a cellulose ether and about 50 to about 5% by weight of a homo- or copolymer of acrylic acid or a pharmaceutically acceptable salt thereof, and

(b) dispersed therein, a pharmaceutically effective amount of the medicament,

said preparation releasing continuously the medicament at a controlled rate; and causing the released medicament to be absorbed through the mucosa or enterally.

4,226,849

SUSTAINED RELEASE THERAPEUTIC COMPOSITIONS

Joseph M. Schor, Locust Valley, N.Y., assignor to Forest Laboratories Inc., New York, N.Y.

Filed Jun. 14, 1979, Ser. No. 48,344
Int. Cl.[3] A61K *47/00*
U.S. Cl. 424—19 9 Claims

1. A shaped and compressed sustained release therapeutic composition comprising a therapeutically active medicament and a carrier base material, characterized by a long-lasting slow and regular incremental release of the medicament upon administration, wherein the carrier base material is hydroxypropylmethylcellulose or a mixture of hydroxypropylmethylcellulose and either up to 30% ethylcellulose or 30% sodium carboxymethylcellulose or both, and wherein the hydroxypropylmethylcellulose or the mixtures thereof have been subjected to hydrolysis and oxidation and have a carbonyl content which ranges from 0.2 to 3.0 grams/100 grams and a carboxyl content which ranges from 0.37 to 2.6 grams/100 grams, the oxidation having been carried out at about 30° to 50° C. in the presence of oxygen or a stream of air for a period of time sufficient to obtain the desired carbonyl and carboxyl values and the composition having incorporated therein 0.1–1.0%, based on the weight of the carrier material, of a reducing stabilizing agent which prevents undesired further oxidation and the hydrolysis having been carried out either (a) by humidification in a chamber at ambient or elevated temperature until the humidity of the chamber reaches at least 85% and the humidity is maintained for at least 12 hours or (b) by mixing the carrier base material with water and heating to a temperature of 30°–100° C. for at least 12 hours.

4,226,850

METHODS FOR CONTROLLING PERSPIRATION

Elias W. Packman, 214 Sycamore Ave., Merion, Pa. 19066, and Ruth Jeffkin, 259 Richards Ave., Lansdowne, Pa. 19050

Filed Nov. 12, 1976, Ser. No. 741,298
Int. Cl.[3] A61K *7/00, 7/32, 7/34, 7/36*
U.S. Cl. 424—47 17 Claims

1. A method of controlling perspiration which comprises administering topically an antiperspirant composition to a human in need thereof, the composition comprising an antihistamine selected from the group consisting of an ethanolamine, an ethylenediamine, an alkylamine, a phenothiazine and a piperazine, or a physiologically acceptable salt thereof, and a pharmaceutically acceptable carrier, the antihistamine being in an amount effective to control the perspiration.

4,226,851

STABLE DENTAL COMPOSITION CONTAINING HYDROGEN PEROXIDE

Hewitt A. Sompayrac, South Main St., Society Hill, S.C. 29593

Filed Jul. 11, 1979, Ser. No. 56,633
Int. Cl.[3] A61K *7/20, 33/40, 31/355*
U.S. Cl. 424—53 9 Claims

1. A composition of matter comprising a mixture of oral hygenic effective aqueous solution of hydrogen peroxide and zinc chloride, and an effective amount of vitamin E for stabilizing the mixture against oxygen release therefrom during storage.

4,226,852

TWO-COMPONENT PEROXIDE HAIR BLEACHING COMPOSITIONS

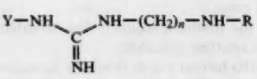
Holger Tesmann, Düsseldorf; Erwin Weinrich, Haan, and Edgar Lieske, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 873,219, Jan. 30, 1978. This application Apr. 5, 1979, Ser. No. 27,512
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1977, 2704905
The portion of the term of this patent subsequent to Jan. 29, 1997, has been disclaimed.
Int. Cl.[2] A61K *7/135*
U.S. Cl. 424—62 3 Claims

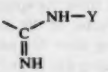
1. A two-component composition for bleaching hair comprised of:

I. a first component consisting essentially of an admixture of:

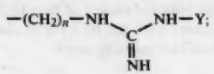
(a) 0.1 to 10 percent by weight of a guanidine derivative of the formula:



wherein R is a member selected from the group consisting of hydrogen, the radical



and the radical



Y is a member selected from the group consisting of hydrogen, the NH_2 radical, and an alkyl radical having 1 to 4 carbon atoms, and n is the integer 2 or 3, or a water soluble acid addition salt thereof,

(b) 1 to 20 percent by weight of an ammonia-free alkalinization agent in an amount sufficient to give the composition a pH of 8–10.5,

(c) 0 to 20 percent by weight of ethylene diurea,

(d) 0 to 0.01 mole/liter of heavy metal cations,

(e) 0 to 10 percent by weight of thickening agents,

(f) 0 to 10 percent by weight of surface-active agents,

(g) 0 to 2 percent by weight of additional conventional ingredients, and

(h) 0 to 70 percent by weight of solvent; and

II. a second component for admixture with said first component consisting essentially of an admixture of:

(a) 2 to 8 percent by weight, calculated as hydrogen peroxide, of a peroxide oxidation agent,

(b) 0 to 0.1 percent by weight of a peroxide oxidant stabilizer, and

(c) up to 70 percent by weight of solvent, the total amount of solvent in both components being from 10 to 70 percent by weight.

4,226,853

FORMALINIZED ALLERGEN-CONTAINING SUBSTANCES AND PRODUCTION THEREOF

David G. Marsh, 11420 Harford Rd., Baltimore, Md. 21057

Continuation-in-part of Ser. No. 289,284, Sep. 15, 1972, abandoned, which is a continuation of Ser. No. 865,481, Oct. 10, 1969, abandoned. This application Feb. 18, 1975, Ser. No. 550,535

Claims priority, application United Kingdom, Oct. 10, 1968, 48064/68; Oct. 1, 1969, 48189/69

Int. Cl.[3] A61K *39/35, 39/36;* C07G *7/00*

U.S. Cl. 424—91 37 Claims

1. A process for producing a formalinized allergen of low allergenic activity in allergic humans and which is capable of inducing in mammals the formation of blocking antibody against the native allergen in significant concentration, comprising: (1) extracting an allergen-containing material with an aqueous solution; (2) removing essentially all of the low molecular weight non-allergenic substances from the soluble part of the said extract to leave the allergen-containing materials in said solution; (3) adding formaldehyde to the said solution of allergen-containing materials to give a concentration of formaldehyde from about 0.06 M to 5.0 M; (4) treating the aqueous extract of material containing said allergens with said formaldehyde solution in a non-phenolic environment at a temperature from about the freezing point of the incubation mixture up to about 40° C.; and (5) incubating the same at a temperature below that which the allergen undergoes substantial heat denaturation and generally from about the freezing point of the incubation mixture up to about 40° C. until the substantial formation of inter- or intramolecular methylene bridge linkages occurs in said solution and the allergenic determinant groups are modified to result in substantial reduction of allergenic properties while largely retaining the desired immunizing properties.

20. A formalinized allergen of low allergenic activity in allergic humans and which is capable of inducing in mammals the formation of blocking antibody against the native allergen in significant concentration, prepared by: (1) extracting an allergen-containing material with an aqueous solution; (2) removing essentially all of the low molecular weight non-allergenic substances from the soluble part of the said extract to leave the allergen-containing materials in said solution; (3) adding formaldehyde solution to the said solution of allergen-containing materials to give a concentration of formaldehyde from about 0.06 M to 5.0 M; (4) treating the aqueous extract of material containing said allergens with said formaldehyde solution in a non-phenolic environment at a temperature from about the freezing point of the incubation mixture up to about 40° C.; and (5) incubating the same at a temperature below that which the allergen undergoes substantial heat denaturation and generally from about the freezing point of the incubation mixture up to about 40° C. until substantial formation of inter- or intramolecular methylene bridge linkages occur in said solution and the allegenic determinant groups are modified to result in substantial reduction of allergenic properties while largely retaining the desired immunizing properties.

4,226,854

DEBRIDEMENT OF DEVITALIZED TISSUE WITH HYDROLYTIC ENZYME PRODUCT

Gerold K. V. Klein, Merepoint Rd., Brunswick, Me. 04011, and John C. Houck, Washington, D.C., assignors to Gerold K. V. Klein, Brunswick, Me.

Division of Ser. No. 887,607, Mar. 17, 1978, which is a continuation of Ser. No. 678,695, Apr. 20, 1976, abandoned, which is a continuation of Ser. No. 489,254, Jul. 17, 1974, abandoned, which is a continuation of Ser. No. 432,622, Jan. 8, 1974, abandoned. This application Jun. 4, 1979, Ser. No. 45,109

Int. Cl.[2] A61K *37/54;* C07G *7/022*

U.S. Cl. 424—94 9 Claims

1. A method for debridement of devitalized tissue from a mammalian host which comprises contacting said tissue with an amount of an enzyme product or a physiologically acceptable alkali metal or acid addition salt thereof which is effective to hydrolyze that portion of the devitalized tissue which is in direct contact with adjacent vital tissue so that the devitalized tissue can be removed therefrom, and removing said devitalized tissue from the vital tissue, said enzyme product being a heat labile protein which is obtainable from bromelain, capable of debridement of devitalized tissue from a mammalian host, water soluble, free of caseinolytic activity; has a peak isoelectric point of about 6; comprises at least two subunits each subunit having a molecular weight of from about 14,300 to 15,000 daltons; is active in the absence of sulfhydryl activation and in the presence of sulfhydryl deactivating quantities of phenylmercuric acetate; and has a characteristic absorption peak in the ultraviolet region of the spectrum at 280 nm.

4,226,855

PLANT VIRAL DISEASE PREVENTIVE ALGINATE CONTAINING COMPOSITIONS

Taichiro Shigematsu, Machida; Tetsuya Shibahara; Hiroshi Kasugai, both of Yokohama; Tetsuo Nakajima, Kawasaki, and Shozo Motojima, Hatano, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Dec. 8, 1977, Ser. No. 858,791

Claims priority, application Japan, Dec. 16, 1976, 51-151406; Dec. 17, 1976, 51-151631

Int. Cl.[2] A61K *27/00*

U.S. Cl. 424—177 13 Claims

1. A plant viral disease preventive composition comprising:

an alginate having the following properties (a) and (b):

(a) a neutralization degree of 10 to 30%, said neutralization degree (wt%) being given from:

$$\frac{(C_5H_7O_4COOM)_m}{(C_5H_7O_4COOH)_{n-m} + (C_5H_7O_4COOM)_m} \times 100$$

wherein m is the number of the carboxylate groups substituted with an alkali metal or ammonium group M;

(b) a viscosity in a 1 wt% aqueous solution at 20° C. of 2 to 10 centipoises;

at least one biopolymer selected from the group consisting of casein, its water-soluble salts and globulin, said biopolymer being blended in an amount of 0 to 40% by weight based on the alginate;

a carbonate and an organic acid, the sum of said carbonate and organic acid being 0 to 35% by weight based on the alginate;

a solid carrier containing silica, said carrier being in an amount of 1 to 30% by weight based on the alginate; and

a surface active agent in an amount of 1 to 10% by weight based on alginate.

4,226,856
PREPARATION AND USE OF BOUVARDIN AND DEOXYBOUVARDIN

Jack R. Cole, Tucson, Ariz., assignor to University Patents, Inc., Norwalk, Conn.

Filed Nov. 20, 1978, Ser. No. 962,161
Int. Cl.³ A61K *37/00;* **C07C** *103/52;* **C07G** *7/00*
U.S. Cl. 424—177 **9 Claims**

1. Purified bouvardin having a purity such that it is more than 90 percent free of all materials naturally associated therewith within *Bouvardia ternifolia* tissue.

6. A method for treatment of a rodent subject to a neoplastic disease, said method comprising administering to said animal from about 0.01 to about 10.0 mg/kg of a compound selected from the group consisting of purified bouvardin, purified deoxybouvardin, or purified mixtures thereof with each other, the purity of said compound or mixture being such that it is more than 90 percent free of all materials naturally associated therewith within *Bouvardia ternifolia* tissue.

9. A pharmaceutical composition for use in treatment of a rodent subject to a neoplastic disease, said composition consisting of a therapeutically effective amount of a compound selected from the group consisting of purified bouvardin, purified deoxybouvardin, or purified mixtures thereof with each other, as an active ingredient, in combination with a pharmaceutically effective diluent, adjuvant or carrier, the purity of said compound or mixture being such that it is more than 90 percent free of all materials naturally associated therewith within *Bouvardia ternifolia* tissue.

4,226,857
SYNTHETIC PEPTIDES HAVING PITUITARY GROWTH HORMONE RELEASING ACTIVITY

Frank A. Momany, Memphis, Tenn., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 30, 1979, Ser. No. 25,552
Int. Cl.² A61K *37/00;* **C07C** *103/52;* **C08L** *37/00*
U.S. Cl. 424—177 **22 Claims**

1. A peptide having a formula

X-Y-Z-E-G-J-L

and the pharmaceutically acceptable non-toxic acid addition salts thereof wherein

X is selected from a group consisting of $—NH_2$, $—NHCH_3$, and $—N(CH_3)_2$;

Y and G are independently selected from a group consisting of Tyr, Trp, and Phe;

Z and J are independently selected from a group consisting of D-Tyr, D-Trp, and D-Phe;

E is selected from a group consisting of Gly, Ala, Val, Leu, Ile, Ser, Thr, Met, Asn, and Gln; and

L is selected from a group consisting of $—CONH_2$, —CONHR, $—CONR_1R_2$, $—CH_2OR$, $—CH_2OH$, —COOH, and —COOR, wherein each R, R_1, and R_2 is independently selected from a group consisting of straight and branched alkyl groups containing 1–6 carbon atoms.

4,226,858
METHOD AND COMPOSITION FOR THE TREATMENT OF SCARS

Rolf W. Pfirrmann, Lucerne, and Otto Wicki, Wolhusen, both of Switzerland, assignors to Ed. Geistlich Sohne A.G. fur Chemische Industrie, Lucerne, Switzerland

Filed May 30, 1979, Ser. No. 43,745
Claims priority, application United Kingdom, May 31, 1978, 25601/78
Int. Cl.³ A01N *9/02, 9/08*
U.S. Cl. 424—195 **5 Claims**

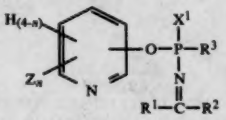
1. Method for the prevention or removal of scar tissue whereby existing scar tissue or a wound or surgical incision is treated topically with oleum hyoscyami.

4,226,859
PYRIDYL ESTERS OF N-ALKYLIDENE-SUBSTITUTED PHOSPHOR- AND PHOSPHONAMIDIC ACIDS

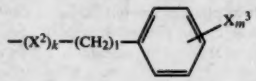
Leonard J. Stach, Riverside, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Jun. 7, 1979, Ser. No. 46,299
Int. Cl.³ A01N *57/24;* **C07D** *213/02*
U.S. Cl. 424—200 **7 Claims**

1. A compound of the formula



wherein X^1 is selected from the group consisting of oxygen and sulfur; R^1 is selected from the group consisting of hydrogen, lower alkyl, phenyl, lower alkoxy and lower alkylthio; R^2 is selected from the group consisting of lower alkoxy, lower alkylthio; with the proviso that a maximum of one of R^1 and R^2 is lower alkoxy or lower alkylthio; Z is selected from the group consisting of lower alkyl, lower alkoxy, nitro and halogen; and n is an integer from 0 to 4; and wherein R^3 is selected from the group consisting of lower alkyl, lower alkoxy, lower alkylthio and



wherein X^2 is selected from the group consisting of oxygen and sulfur; X^3 is halogen; k is the integer 0 or 1; and l and m are each integers from 0 to 3.

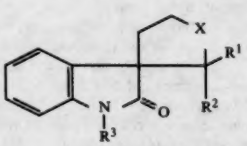
7. A method of controlling insects which comprises contacting said insects with an insecticidal composition comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to insects, an effective amount of a compound of claim 1.

4,226,860
SPIROINDOLONES

Christopher A. Demerson, Montreal, and Leslie G. Humber, Dollard des Ormeaux, both of Canada, assignors to American Home Products Corporation, New York, N.Y.

Filed Aug. 6, 1979, Ser. No. 64,342
Int. Cl.² A61K *31/405, 31/54;* **C07D** *209/96, 493/10*
U.S. Cl. 424—240 **16 Claims**

1. A compound of formula I



(I)

in which R^1 is lower alkyl or carboxy(lower)alkyl, R^2 is lower alkyl, R^3 is lower alkyl or phenyl(lower)alkyl, and X is oxygen or CH_2, or a therapeutically acceptable base addition salt thereof when R^1 is carboxy(lower)alkyl.

8. A method of treating hypertension in a hypertensive mammal, which comprises administering to said mammal an effective antihypertensive amount of a compound of claim 1.

9. A method of treating hypertension in a hypertensive mammal, which comprises administering to the mammal an antihypertensive effective amount of a compound of claim 1, in combination with an effective amount of a diuretic, or an

antihypertensive agent or a combination of a diuretic and an antihypertensive agent.

4,226,861

N-LOWER-ALKYL 3-PHENOXY-1-AZETIDINECARBOXAMIDES

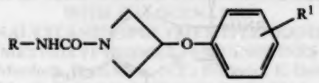
Albert D. Cale, Jr., Mechanicsville, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

Continuation-in-part of Ser. No. 897,462, Apr. 18, 1978, abandoned. This application Apr. 13, 1979, Ser. No. 29,800

Int. Cl.[2] **C07D** *205/04, 31/395*

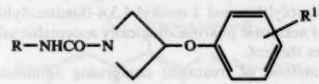
U.S. Cl. 424—244 **21 Claims**

1. A compound selected from N-lower-alkyl 3-phenoxy-1-azetidinecarboxamides having the formula:



wherein R is lower alkyl and R^1 is hydrogen, aminocarbonyl or trifluoromethyl.

8. A process which comprises orally administering to a living animal body for its anit-convulsant effect an effective amount of a compound selected from the group consisting of N-lower-alkyl 3-phenoxy-1-azetidinecarboxamides of the formula:



wherein R is lower alkyl and R^1 is hydrogen, aminocarbonyl or trifluoromethyl in admixture with a pharmaceutically acceptable carrier.

4,226,862

STEROIDS AND PROCESS FOR PREPARING THE SAME

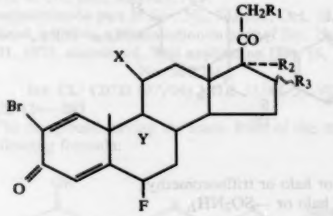
Mario Riva; Gaetano Palladino, and Lucian Toscano, all of Milan, Italy, assignors to Pierrel S.p.A., Milan, Italy

Filed Feb. 26, 1975, Ser. No. 553,124

Int. Cl.[2] **C07J** *5/00;* **A61K** *31/56*

U.S. Cl. 424—243 **41 Claims**

1. Compounds having the formula:



(A)

wherein

X is Br, Cl or OQ;

Y is Br, Cl, F or H;

R_1 is OQ or an alkyl orthoester;

R_2 is OQ;

R_3 is H, αOQ, αCH_3 or βCH_3; and

Q, which may be the same or different, is hydrogen or an acyl radical, or OQ in the 16, 17 or in the 17 and 21 positions may together form a cyclic ketal, cyclic acetal or cyclic alkyl orthoester; wherein at least one radical OQ is a carboxylic or an inorganic acid radical and pharmaceutically acceptable salts and esters thereof.

10. A method of combatting inflammation in a patient comprising applying a compound according to claim **1** to the patient topically or systemically in a non-toxic pharmaceutically effective amount.

4,226,863

7-METHOXY CEPHALOSPORINS

Hirotada Yamada; Takenari Nakagome, both of Nishinomiya, and Toshiaki Komatsu, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

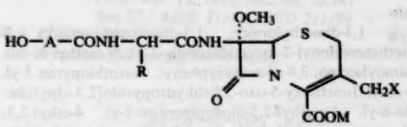
Division of Ser. No. 745,749, Nov. 29, 1976, Pat. No. 4,125,611. This application Aug. 25, 1978, Ser. No. 937,626

Claims priority, application Japan, Nov. 28, 1975, 50-142647

Int. Cl.[2] **A61K** *31/545;* **C07D** *501/56*

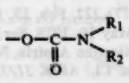
U.S. Cl. 424—246 **26 Claims**

1. A cephalosporin of the formula (I):



(I)

wherein A is a heteroaromatic ring selected from the group consisting of quinoline, isoquinoline, cinnoline, naphthyridine, quinoxaline, pyrazolopyridine, pyridopyrazine, thiazolopyrimidine, pyridopyrimidine, pyrimidinopyridazine, thienopyridine, thiazolopyridine, pyridine, pyrimidine, pyridazine, triazine, and pyrazine, each of which is unsubstituted or substituted with 1 or 2 substituents selected from the group consisting of halo, $(C_1–C_4)$alkyl, $(C_1–C_4$alkoxy, $(C_2–C_5)$alkanoyl, $(C_2–C_5)$alkoxycarbonyl, $(C_1–C_4)$alkylthio, mercapto, hydroxy, $(C_2–C_5)$alkoxymethyl, cyano, nitro, $(C_1–C_4)$alkylsulfonyl, phenylsulfonyl, sulfamoyl, carbamoyl, phenyloxycarbonylamino, acetoacetylamino, $(C_1–C_4)$alkylamino, di-$(C_1–C_4$-)alkylamino, halo-$(C_1–C_4)$alkyl, $(C_2–C_5)$alkenyl, phenyl, $(C_3–C_6)$cycloalkyl, $(C_4–C_6)$cycloalkylene, piperazino, piperidino, pyrrolidino, and morpholino; R is a phenyl or phenyl substituted with up to three chemically compatible substituents selected from the group consisting of nitro, di-$(C_1–C_4)$alkylamino, $(C_2–C_5)$alkanoylamino, $(C_1–C_4)$alkylsulfonamino, amino hydroxy, $(C_2–C_5)$alkanoyloxy, $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy, chloro, bromo, fluoro, iodo, trifluoromethyl, hydroxymethyl, ureido or sulfamyl; a thienyl group; a furyl group; a cyclohexadienyl group or a cyclohexenyl group; X is an acetoxy group; pyridinium pyridinium substituted with a methyl or carbamoyl group; or a group of the formula:



in which R_1 and R_2, which may be the same or different, each is a hydrogen atom or a $(C_1–C_4)$alkyl group; and M is a hydrogen atom or a biologically active carboxyl-protecting group chosen from the group consisting of phenacyl, $(C_2–C_5)$alkanoyloxymethyl, benzoyloxymethyl; phthalidyl and indanyl, or is an anionic charge only when X is a pyridinium group, and the non-toxic, pharmaceutically acceptable salts thereof.

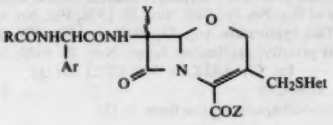
26. A method of treating or preventing infectious diseases caused by Gram-positive or Gram-negative bacteria in an animal which comprises administering an antimicrobially effective amount of at least one compound of the formula (I) of claim **1** to said animal.

4,226,864
7-SUBSTITUTED AMINOACETAMIDO OXADETHIACEPHALOSPORINS

Masayuki Narisada, Ibaraki; Teruji Tsuji, Takatsuki; Mitsuru Yoshioka, Toyonaka; Matsumura Hiromu, Ashiya; Yoshio Hamashima, Kyoto; Sadao Hayashi, Ashiya, and Wataru Nagata, Nishinomiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Aug. 22, 1977, Ser. No. 826,818
Claims priority, application Japan, Sep. 1, 1976, 51-105117
Int. Cl.[3] A61K *31/535;* C07D *265/04, 413/02*
U.S. Cl. 424—248.5 16 Claims

1. A compound of the following formula or its pharmaceutically acceptable salt:



wherein

R is 1,3-dimethylureido, 1,3-dimethylthioureido, 3-methanesulfonyl-2-oxoimidazolidin-1-yl, N-methyl-N-cinnamoylamino, 3,4-di-acetoxyphenyl, 4-oxothiopyran-3-yl, 8-ethyl-3-methoxy-5-oxo-5,8-dihydropyrido[2,3-c]pyridazin-6-yl, 4-methyl-2,3-dioxopiperazin-1-yl, 4-ethyl-2,3-dioxopiperazin-1-yl, or 4-propyl-2,3-dioxopiperazin-1-yl;

Ar is phenyl, hydroxyphenyl, carbamoyloxyphenyl, hydroxyfluorophenyl, or acetoxyphenyl;

Y is hydrogen or methoxy; and

Het is 1-methyltetrazol-5-yl, 1,3,4-thiadiazol-5-yl, 2-methyl-1,3,4-thiadiazol-5-yl, or 1,2,3-thiazol-4-yl.

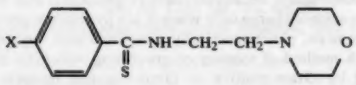
15. An antibacterially active pharmaceutical composition which comprises an antibacterially effective amount of a compound according to claim 1 or pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier therefor.

4,226,865
METHOD OF TREATING DEPRESSION

Willy Burkard, Reinach, and Pierre-Charles Wyss, Muttenz, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 771,222, Feb. 23, 1977, abandoned. This application May 19, 1978, Ser. No. 907,366
Claims priority, application Austria, Mar. 8, 1976, 1674/76
Int. Cl.[3] A61K *31/535*
U.S. Cl. 424—248.5 3 Claims

1. A method of treating a depressive condition which comprises administering to a host requiring such treatment an antidepressive amount of a compound of the formula



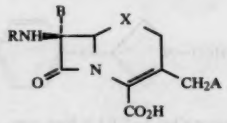
wherein X is halogen, trifluoromethyl or C_{3-4} alkyl or a pharmaceutically acceptable acid addition salt thereof.

4,226,866
NOVEL ANTIBIOTIC ANALOGUES OF CEPHALOSPORINS

Burton G. Christensen, Scotch Plains, and Ronald W. Ratcliffe, North Plainfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 869,199, Jan. 13, 1978, abandoned, which is a continuation of Ser. No. 587,526, Jun. 16, 1975, abandoned, which is a continuation-in-part of Ser. No. 395,662, Sep. 18, 1973, abandoned, which is a continuation-in-part of Ser. No. 303,906, Nov. 6, 1972, abandoned. This application Jun. 8, 1979, Ser. No. 47,593
Int. Cl.[2] A61K *31/535;* C07D *265/34*
U.S. Cl. 424—248.51 19 Claims

1. A compound of the formula:



and its isomers wherein R is a carboxylic acyl radical; B is H, OCH_3, CH_3 or SR'' wherein R'' is lower alkyl of 1–6 carbons and phenyl; A is azido, halo, cyano, quaternary ammonium, hydroxy, carbamoyloxy, N-lower alkyl carbamoyloxy, N,N-di-lower alkyl carbamoyloxy, amino mercapto, lower alkylthio, lowe alkanoyloxy, aroyloxy or a 5-membered heterocyclic thio radical selected from the group consisting of 1-methyltetrazolylthio and 2-methyl-1,3,4-thiadiazolylthio; X is —O— and non-toxic pharmacologically acceptable salts, esters and amides thereof.

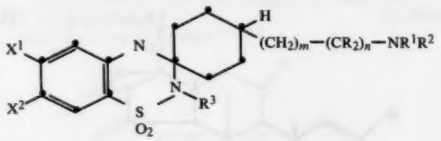
16. A method of treatment comprising administering an antibiotically effective amount of a compound according to claim 1.

4,226,867
3,3-SUBSTITUTED SPIRO-1,2,4-BENZOTHIADIAZINES

Edward J. Cragoe, Jr., Lansdale, and Otto W. Woltersdorf, Jr., Chalfont, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 6, 1978, Ser. No. 949,348
Int. Cl.[3] C07D *285/24, 285/30;* A61K *31/54*
U.S. Cl. 424—246 21 Claims

1. A compound of the formula



wherein

X^1 is H or halo or trifluoromethyl,

X^2 is H, halo or $—SO_2NH_2$,

R is H or lower alkyl,

R^1 is H or lower alkyl,

R^2 is lower alkyl or C_3–C_6 cycloalkyl

R^1 and R^2 may be joined to form $—(CH_2)_4$— or $—(CH_2)_5$—,

R^3 is H, lower alkyl, phenyl or chlorophenyl,

m is 0 or 1 and

n is 0 to 5

and pharmaceutically acceptable salts thereof.

21. A method of treating hypertension by administering an effective amount of a compound of claim 1 to a hypertensive human.

4,226,868

PROCESSES FOR INHIBITING THE GROWTH OF SEA URCHIN EGGS

Seymour Zigman, and Paul B. Gilman, Jr., both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,283
Int. Cl.[3] A01N *43/42*
U.S. Cl. 424—258 8 Claims

1. A process for inhibiting the growth of sea urchin eggs comprising contacting the eggs with a growth inhibiting concentration of a methine dye in an inert liquid carrier, the methine dye (i) having a reduction potential (E_R) equal to or more negative than −1.0 volt and (ii) being capable of being absorbed by the cells of sea urchin eggs.

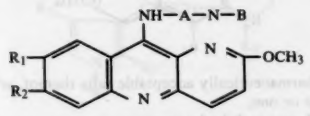
4,226,869

METHOD OF STIMULATING THE IMMUNE RESPONSE WITH HALOGENATED 10-(ω-DIALKYLAMINOPOLYMETHYLENEAMINO)-2-METHOXYPYRIDO[3,2-b]QUINOLINES

Keith C. Murdock, Pearl River, N.Y.; Frederick E. Durr, Ridgewood; Martin R. Damiani, Allendale, both of N.J., and Patrick T. Izzo, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 2, 1979, Ser. No. 9,025
Int. Cl.[3] A61K *31/47*
U.S. Cl. 424—258 9 Claims

1. A method of stimulating the immune response in a warm-blooded animal which comprises orally administering to said animal an effective immunostimulating amount of a compound of the formula:



wherein R_1 and R_2 are each selected from the group consisting of hydrogen and halogen; A is a straight or branched alkyl chain of 3 to 7 carbon atoms; B is selected from the group consisting of dimethyl, diethyl and di-(2-hydroxyethyl); and the pharmaceutically acceptable salts thereof.

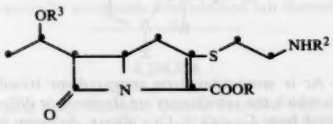
4,226,870

O-, N- AND CARBOXYL DERIVATIVES OF THIENAMYCIN

Burton G. Christensen, Metuchen; John Hannah, Matawan; William J. Leanza, Berkeley Heights; Ronald W. Ratcliffe, Matawan, and David H. Shih, Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 733,652, Oct. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 634,294, Nov. 21, 1975, abandoned. This application Dec. 16, 1977, Ser. No. 861,246
Int. Cl.[3] C07D *487/04;* A61K *31/44, 31/40*
U.S. Cl. 424—263 2 Claims

1. The compound having the trans- form of the structure of the following formula:



wherein r is hydrogen, a pharmaceutically acceptable salt cation, or an easily removable blocking group; R^3 is SO_3H or SO_3CH_3; and R^2 is formyl, acetyl, propionyl, butyryl, chloroacetyl, methoxyacetyl, aminoacetyl, methoxycarbonyl, ethoxycarbonyl, methylcarbamoyl, ethylcarbamoyl, phenylthiocarbonyl, 3-aminopropionyl, 4-aminobutyryl, N-methylaminoacetyl, N,N-dimethylaminoacetyl, N,N,N-trimethylaminoacetyl, 3-(N,N-dimethyl)aminopropionyl, 3-(N,N,N-trimethyl-)amino propionyl, N,N,N-triethylaminoacetyl, pyridiniumacetyl, guanylthioacetyl, guanidinoacetyl, 3-guanidinopropyl, N^3-methylguandinopropionyl, hydroxyacetyl, 3-hydroxypropionyl, acryloyl, propynoyl, malonyl, phenoxycarbonyl, amidinoacetyl, acetamidinoacetyl, amidinopropionyl, acetamidopropionyl, guanylureidoacetyl, guanylcarbamoyl, carboxymethylamino-acetyl, sulfoacetylaminoacetyl, phosphonoacetylaminoacetyl, N^3-dimethylaminoacetamidinopropionyl, ureidocarbonyl, dimethylguanylthioacetyl, 3-(1-methyl-4-pyridinium)propionyl, 3-(5-aminoimidazol-1-yl)propionyl, 3-methyl-1-imidazoliumacetyl, 3-sydnonylacetyl, o-aminomethylbenzoyl, or o-aminobenzoyl.

2. An antibiotic pharmaceutical composition comprising a therapeutically effective amount of a compound according to claim 1 and a pharmaceutical carrier therefor.

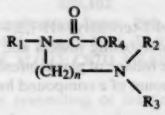
4,226,871

HETEROCYCLIC CARBAMATES

William A. Bolhofer, Frederick, and John D. Prugh, Chalfont, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 13, 1979, Ser. No. 20,147
Int. Cl.[2] A61K *31/44;* C07D *211/84*
U.S. Cl. 424—263 9 Claims

1. A compound having the formula:



wherein n is 2 to 4;

R_1 is pyridyl which may optionally be substituted with one, two or three of loweralkyl, halogen, trifluoromethyl, loweralkoxy, loweralkylthio, loweralkylsulfonyl or mixtures thereof;

R_2 and R_3 are loweralkyl; and

R_4 is loweralkyl or phenyl.

9. A composition for the suppression of gastric acid secretions which comprises an inert carrier and a compound of claim 1.

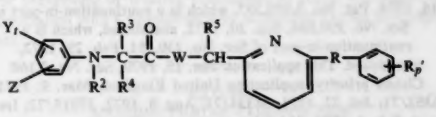
4,226,872

PYRIDYL ESTERS OF α-SUBSTITUTED AMINO ACIDS

Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 16,775, Mar. 2, 1979, abandoned. This application Aug. 24, 1979, Ser. No. 69,445
Int. Cl.[2] A01N *9/22;* C07D *213/55*
U.S. Cl. 424—263 32 Claims

1. A compound of the formula:



wherein,

R is oxygen, sulfur, methylene or carbonyl;

R' is fluoro, bromo, chloro, trifluoromethyl, methyl, methoxy or methylthio;

p is zero, one or two; W is oxygen or sulfur;

t is zero, one, two, three or four; Y is independently selected from hydrogen, lower alkyl, lower haloalkyl, lower alkoxy, lower alkylthio, lower alkylcarbonyl, lower alkoxycarbonyl, lower acyloxy, halogen, cyano, nitro, and lower haloalkylthio; and Z is independently selected from the values of Y, cycloalkyl having 3 to 8 carbon atoms, and lower haloalkoxy; or Y and Z form a methylenedioxy group;

R^2 is hydrogen or lower alkyl;

R^3 is lower alkyl of 2 to 5 carbon atoms, lower alkenyl of 2 to 5 carbon atoms, lower haloalkyl of 1 to 4 carbon atoms, lower haloalkenyl of 2 to 4 carbon atoms, or lower cycloalkyl of 3 or 4 carbon atoms;

R^4 is hydrogen or fluoro;

R^5 is hydrogen, cyano, ethynyl, methyl, ethyl or trifluoromethyl; and the salt thereof of a strong inorganic acid or organic acid.

30. A method for the control of pests selected from insects of the order Lepidoptera, Orthoptera, Heteroptera, Homoptera, Diptera, Coleoptera and Hymenoptera; mites of the family Tetranychidae and Tarsonemidae and ticks of the family Ornithodoros which comprises applying to the locus of the pest a compound according to claim 1, in a pesticidally effective amount, in a suitable liquid or solid carrier.

4,226,873

5-SUBSTITUTED-3-FLUOROSULFONYL-4H-1,2,4-TRIAZOLES AND USE AS INSECTICIDES AND MITICIDES

Joel L. Kirkpatrick, Overland Park, and William C. Doyle, Jr., Leawood, both of Kans., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

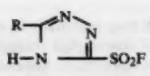
Continuation-in-part of Ser. No. 697,505, Jun. 18, 1976, abandoned. This application Feb. 23, 1977, Ser. No. 771,133

Int. Cl.³ A01N *43/64;* C07D *249/12*

U.S. Cl. 424—269 **38 Claims**

1. 3-Fluorosulfonyl-5-tert.butyl-4H-1,2,4-triazole.

10. A method of combating insects and mites which comprises applying to the foliage of plants infested with insects and mites an effective amount of a compound having the structural formula



including tautomeric forms thereof, in which R is hydrogen, C_1 to C_6 alkyl, branched or unbranched, benzyl, phenyl or C_3 to C_6 cycloalkyl, in combination with a major proportion of an inert diluent.

4,226,874

PHARMACOLOGICALLY ACTIVE THIOUREA AND UREA COMPOSITIONS AND METHODS OF USE

Graham J. Durant, Welwyn Garden City; John C. Emmett, Codicote, and Charo R. Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

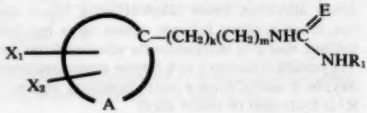
Division of Ser. No. 837,961, Sep. 20, 1977, Pat. No. 4,151,288, which is a division of Ser. No. 758,291, Jan. 5, 1977, Pat. No. 4,069,327, which is a division of Ser. No. 637,494, Dec. 4, 1975, Pat. No. 4,018,931, which is a division of Ser. No. 451,333, Mar. 14, 1974, Pat. No. 3,950,353, which is a continuation-in-part of Ser. No. 290,584, Sep. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 230,451, Feb. 29, 1972, abandoned. This application Jan. 15, 1979, Ser. No. 3,160

Claims priority, application United Kingdom, Mar. 9, 1971, 6352/71; Jul. 22, 1971, 34334/71; Aug. 8, 1972, 37015/72; Ireland, Feb. 3, 1972, 136/72

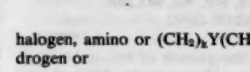
Int. Cl.² A61K *31/41, 31/415*

U.S. Cl. 424—269 **12 Claims**

1. A pharmaceutical composition to inhibit H-2 histamine receptors comprising a pharmaceutical carrier and in an effective amount to inhibit said receptors a heterocyclic compound of the formula:



wherein A is such that there is formed together with the carbon atom shown an unsaturated heterocyclic nucleus, said unsaturated heterocyclic nucleus being a triazole pyridine ring; X_1 is hydrogen, lower alkyl, hydroxyl, trifluoromethyl, benzyl,



halogen, amino or $(CH_2)_kY(CH_2)_mNHC$ (E, NHR_1); X_2 is hydrogen or

when X_1 is lower alkyl, lower alkyl or halogen, k is 0 to 2 and m is 2 or 3, provided that the sum of k and m is 3 or 4; Y is oxygen, sulphur or NH; E is oxygen or sulphur; and R_1 is hydrogen, lower alkyl, benzoyl or di-lower alkylamino-lower alkyl or a pharmaceutically acceptable addition salt thereof.

4,226,875

NOVEL SPIRO-OXAZOLIDINEDIONES

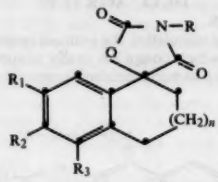
Rodney C. Schnur, Noank, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 2, 1979, Ser. No. 26,615

Int. Cl.² C07D *263/44;* A61K *31/42*

U.S. Cl. 424—272 **9 Claims**

1. A compound of the formula



and the pharmaceutically acceptable salts thereof, wherein

n is zero or one;

R and R_2 are each hydrogen;

and R_1 and R_3 are each selected from the group consisting of hydrogen, chloro, bromo, fluoro and alkyl of 1 to 3 carbon atoms.

4,226,876

ARTHROPODICIDAL IMIDAZOLINE DERIVATIVES

Frederick C. Copp, Beckenham; Peter T. Roberts, Berkhamsted; Alexander D. Frenkel, Aston Clinton, and David Collard, Beckenham, all of England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

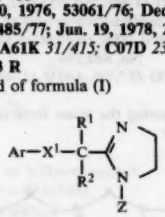
Continuation-in-part of Ser. No. 862,168, Dec. 19, 1977, abandoned. This application Dec. 11, 1978, Ser. No. 968,422

Claims priority, application United Kingdom, Dec. 20, 1976, 53059/76; Dec. 20, 1976, 53061/76; Dec. 20, 1976, 53062/76; Oct. 26, 1977, 44485/77; Jun. 19, 1978, 27295/78

Int. Cl.³ A61K *31/415;* C07D *233/22, 233/24*

U.S. Cl. 424—273 R **60 Claims**

1. A compound of formula (I)



(I)

wherein Ar is unsubstituted or mono-, di or tri-substituted phenyl in which the substituents are the same or different and are selected from C_{1-4} alkyl, C_{1-4} alkoxy, halogen, hydroxy, cyano, amino, trifluoromethyl or nitro and in which any two adjacent carbon atoms on the phenyl ring may optionally be joined by a carbon chain having 3 or 4 carbon atoms;

X^1 is O or NH;

R^1 and R^2 are the same or different and are hydrogen or C_{1-4} alkyl;

Z is a group

in which X^2 is O or S;

and R^3 is C_{1-4} alkyloxy, aryloxy or NR^5R^6, where "aryl" is phenyl or naphthyl either unsubstituted or substituted with one or more substituent(s) which are the same or different and which are selected from C_{1-4} alkyl, C_{1-4} alkoxy, halogen, nitro, cyano and amino; and

R^5 and R^6 are the same or different and are hydrogen, C_{1-4} alkyl or aryl where "aryl" is as defined with respect to R^3; or an acid addition salt thereof.

38. A method of controlling arthropod pests which comprises applying to the pest or the pest's environment an arthropodicidally effective amount of a compound of formula (I) as defined in claim **1** or an acid addition salt thereof.

4,226,877

PYRAZOLES ACTIVE IN THE CENTRAL NERVOUS SYSTEM

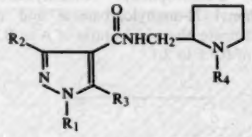
David L. Arendsen, Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 881,319, Feb. 27, 1978, abandoned. This application May 14, 1979, Ser. No. 39,015

Int. Cl.[2] **A61K** *31/415;* **C07D** *403/12*

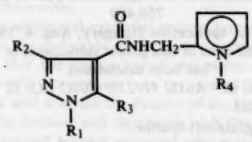
U.S. Cl. 424—273 P **9 Claims**

1. A compound of the formula



wherein R_1 is hydrogen, lower alkyl, or phenyl, R_2 is hydrogen or lower alkyl, R_3 is lower alkoxy or hydroxy, and R_4 is lower alkyl, provided the compound wherein R_2 is isopropyl when R_1 is methyl, R_3 is methoxy and R_4 is ethyl is excluded, and the pharmaceutically acceptable acid addition salts thereof.

6. A method of treating schizophrenia in mammals which method comprises administering to a mammal in need of such treatment an effective amount of a compound of the formula



wherein R_1 is hydrogen, lower alkyl, or phenyl, R_2 is hydrogen or lower alkyl, R_3 is lower alkoxy or hydroxy, and R_4 is lower alkyl, provided the compound wherein R_2 is isopropyl when R_1 is methyl, R_3 is methoxy and R_4 is ethyl is excluded, or a pharmaceutically acceptable acid addition salt thereof.

4,226,878

IMIDAZOLE DERIVATIVE

Kinji Iizuka; Kenji Akahane; Denichi Momose; Yukio Kamijo, all of Matsumoto, and Yukiyoshi Ajisawa, Okaya, all of Japan, assignors to Kissei Pharmaceutical Co., Ltd., Matsumoto and Ono Pharmaceutical Co., Ltd., Osaka, both of, Japan

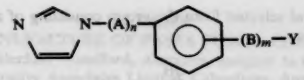
Filed Jun. 13, 1979, Ser. No. 48,112

Claims priority, application Japan, Jun. 13, 1978, 53-71273

Int. Cl.[3] **C07D** *233/60;* **A61K** *31/415*

U.S. Cl. 424—273 R **22 Claims**

1. A compound of the formula:



wherein Y is a carboxyl group or an alkoxycarbonyl group having 2 to 7 carbon atoms, A and B, which may be the same or different, each is a straight- or branched-chain alkylene or alkenylene group having 1 to 8 carbon atoms, n and m are zero or 1, with the proviso that the aggregate number of the linear carbon atoms in A and B is 2, 3 or 4; and the pharmaceutically acceptable salts thereof.

22. A method of alleviating the diseases caused by thromboxane A_2 in mammals which comprises administering a therapeutically effective amount of a compound of claim **1**.

4,226,879

ANTIBIOTIC COMPOSITION

Satoshi Omura, Tokyo; Chiaki Kitao, Yokohama; Akira Nakagawa, Fuchu; Haruo Tanaka, Machida; Juichi Awaya, Soka, and Ruiko Oiwa, Yokohama, all of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Ohte and The Kitasato Institute, Tokyo, both of, Japan

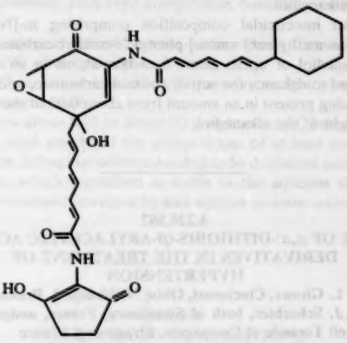
Continuation-in-part of Ser. No. 821,361, Aug. 3, 1977, abandoned, which is a continuation-in-part of Ser. No. 771,875, Feb. 25, 1977, abandoned. This application Sep. 1, 1978, Ser. No. 939,102

Claims priority, application Japan, Feb. 27, 1976, 51-20119; Aug. 3, 1976, 51-92426; Aug. 3, 1976, 51-92427

Int. Cl.[2] **A61K** *31/335;* **C07D** *303/06;* **A61K** *35/00*

U.S. Cl. 424—278 **10 Claims**

9. A method for preventing or treating coccidiosis in an animal subject which comprises administering to said animal subject an effective amount of the compound



for preventing or treating coccidiosis as active ingredient in association with a physiologically acceptable carrier or excipient.

4,226,880

ANTIBACTERIAL COMPOUNDS

Norman H. Rogers, Rudgwick, and Peter J. O'Hanlon, Redhill, both of England, assignors to Beecham Group Limited, England

Division of Ser. No. 955,196, Oct. 27, 1978. This application May 24, 1979, Ser. No. 42,014

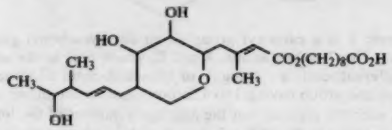
Claims priority, application United Kingdom, Nov. 1, 1977, 45305/77

Int. Cl.[2] **A61K** *31/35*

U.S. Cl. 424—283 **12 Claims**

7. The method of treating human or veterinary bacterial or mycoplasma-induced infections therapeutically or prophylactically which comprises administering to a human or veterinary aninal respectively an antibacterially effective amount of

a compound selected from the group consisting of an acid of the formula:



, a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable ester thereof.

4,226,881

INSECTICIDAL COMPOSITIONS

Sol J. Barer, Clark, N.J., assignor to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 631,962, Nov. 14, 1975, abandoned. This application Mar. 18, 1977, Ser. No. 779,167

Int. Cl.³ A01N *31/00, 43/08, 47/10*

U.S. Cl. 424—285 **6 Claims**

1. An insecticidal composition comprising 1-naphthyl N-methyl carbamate and an alkanediol of up to about 6 carbon atoms in an amount sufficient to enhance the activity of said carbamate, said carbamate being present in an amount from about 0.05 to about 10% by weight of the alkanediol.

3. An insecticidal composition comprising (2,3-dihydro-2,2-dimethyl-7-benzofuranyl) N-methyl carbamate and an alkanediol of up to about 6 carbon atoms in an amount sufficient to enhance the activity of said carbamate, said carbamate being present in an amount from about 0.05 to about 10% by weight of the alkanediol.

5. An insecticidal composition comprising m-[N-(dimethylaminomethylene) amino] phenyl N-methyl carbamate and an alkanediol of up to about 6 carbon atoms in an amount sufficient to enhance the activity of said carbamate, said carbamate being present in an amount from about 0.05 to about 10% by weight of the alkanediol.

4,226,882

USE OF α,α'-DITHIOBIS-(β-ARYLACRYLIC ACID) DERIVATIVES IN THE TREATMENT OF HYPERTENSION

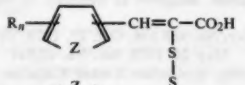
Eugene L. Giroux, Cincinnati, Ohio; Nellikunja J. Prakash, and Paul J. Schechter, both of Strasbourg, France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

Filed Mar. 2, 1979, Ser. No. 16,941

Int. Cl.³ A61K *31/19, 31/34, 31/38, 31/40*

U.S. Cl. 424—285 **5 Claims**

1. A method of treating hypertension in a patient in need thereof which comprises administering to said patient an effective amount of an α,α'-dithiobis(β-arylacrylic acid of the following formula:



wherein Z is C=C, O, S or NH; R is H, CH_3, C_2H_5, OH, CH_3O, C_2H_5O, Cl, Br, F, I or CF_3; and n is 1, 2 or 3; or a pharmaceutically acceptable non-toxic salt thereof.

4,226,883

CARBAMATE DERIVATIVES AND METHOD FOR MANUFACTURE THEREOF

Izuru Yamamoto, No. 5-1, Kamiyoga 2-chome, Setagaya-ku, Tokyo; Yohji Takahashi, No. 10-4, Ogawa 2-chome, Machida-shi, Tokyo, and Nobuo Kyomura, No. 9-7, Mita 1-chome, Tama-ku, Kawasaki-shi, Kanagawa-ken, all of Japan

Division of Ser. No. 622,413, Oct. 14, 1975. This application Jul. 3, 1978, Ser. No. 921,750

Claims priority, application Japan, Mar. 22, 1975, 50-34708; Mar. 27, 1975, 50-37179; Mar. 28, 1975, 50-37459; Mar. 28, 1975, 50-37460; Mar. 30, 1975, 50-38152; Mar. 31, 1975, 50-38980; Oct. 15, 1974, 49-118387; Nov. 11, 1974, 49-129726; Dec. 23, 1974, 49-147838; Feb. 6, 1975, 50-15629; Feb. 6, 1975, 50-15630; Feb. 14, 1975, 50-18627

Int. Cl.³ A01N *47/10*

U.S. Cl. 424—300 **13 Claims**

1. An insecticidal composition containing as the effective agent a synergistic mixture of:

A. a N-n-propylcarbamate selected from the group consisting of 3-methylphenyl N-n-propylcarbamate; 3,4-dimethylphenyl N-n-propylcarbamate and 3,5-dimethylphenyl N-n-propylcarbamate; and

B. a N-methylcarbamate selected from the group consisting of 3-methylphenyl N-methylcarbamate; 3,4-dimethylphenyl N-methylcarbamate; 3,5-dimethylphenyl N-methylcarbamate; 2-i-propylphenyl N-methylcarbamate; 2-sec-butylphenyl N-methylcarbamate; 3-t-butylphenyl N-methylcarbamate; 3-methyl-5-i-propylphenyl N-methylcarbamate; 2-chlorophenyl N-methylcarbamate; 2-i-propoxyphenyl N-methylcarbamate and naphthyl N-methylcarbamate; the weight ratio of A to B being within the range of 0.5:1 to 2:1.

4,226,884

L-GAMMA-GLUTAMYL-TAURINE AS EXTRACTED FROM PARATHYROID GLAND AND METHOD OF TREATMENT USING SAME

Laszlo Feuer, Budapest, Hungary, assignor to Chinoin Gyógyszer és Vegyészeti Termékek Gyára Rt., Budapest, Hungary

Continuation-in-part of Ser. No. 457,627, Apr. 3, 1974, Pat. No. 4,001,396, which is a continuation-in-part of Ser. No. 274,723, Jul. 24, 1972, abandoned. This application Jan. 3, 1977, Ser. No. 756,409

Claims priority, application Hungary, Aug. 4, 1971, 1146

The portion of the term of this patent subsequent to Jan. 4, 1994, has been disclaimed.

Int. Cl.² A61K *31/255;* **C07C** *143/12*

U.S. Cl. 424—303 **2 Claims**

1. L-gamma-glutamyl-taurine.

2. A pharmaceutical composition for the treatment or prevention of radiation poisoning, comprising an effective amount of the compound defined in claim 1 in admixture with a pharmaceutically acceptable carrier.

4,226,885

GUANYLHYDRAZONES AND MEDICAMENTS CONTAINING THEM

Henri Orzalesi, and Jean Castel, both of Montpellier, France, assignors to Choay S.A., Paris, France

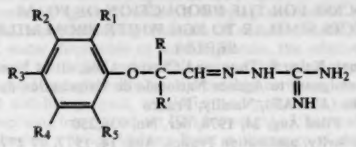
Filed Oct. 13, 1977, Ser. No. 841,947

Claims priority, application France, Oct. 13, 1977, 76 30722

Int. Cl.³ C07C *143/02, 133/10;* **A61K** *31/255, 31/155*

U.S. Cl. 424—303 **33 Claims**

1. A guanyl hydrazone of the following general formula (I):



(I)

wherein:

R_1, R_2, R_3, R_4 and R_5, which may be identical or different, represent hydrogen, halogen, lower alkyl or alkoxy of which the alkyl is lower alkyl; and

R and R', which may be identical or different, represent hydrogen or methyl, and the physiologically acceptable salts thereof.

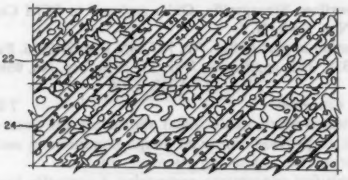
5. The guanyl hydrazone of claim 1, wherein said alkoxy is methoxy.

4,226,886

SELF-METERING LIQUID RETENTIVE PAD AND PROCESS FOR PRODUCING SAME

A. Dale Lakes, Dayton, Ohio, assignor to Micro-Cel Systems, Inc., Dayton, Ohio

Filed Feb. 16, 1979, Ser. No. 12,948
Int. Cl.[2] B32B *3/26*; B29D *7/02*
U.S. Cl. 428—304 14 Claims



11. A multi-layer ink printer comprising in combination:

A. an extruded microporous polymer layer;

B. an outer skin portion of the extruded microporous polymer layer with channels and pores of a size smaller than the channels and pores of the microporous polymer layer integral therewith;

C. a second additional extruded porous polymer layer connected to the underside of the first microporous polymer layer so that the channels and the pores of the second layer are of a size greater than the size of the pores in the first layer and wherein the density of the layers is greatest at the skin portion and decreases with the cross section; and this second layer is extruded onto a solid profile

and

D. ink contained in the channels and pores of both layers self-metering in use.

4,226,887

ANTI-INFLAMMATORY AGENTS

Winston S. Marshall, Bargersville, and William Pfeifer, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 522,006, Nov. 8, 1974, which is a division of Ser. No. 428,163, Dec. 26, 1973, Pat. No. 3,991,212. This application Apr. 16, 1979, Ser. No. 29,970
Int. Cl.[3] A61K *31/015*
U.S. Cl. 424—356 3 Claims

1. A method of treating inflammation, fever, or pain in a warm-blooded animal which comprises administering to the animal an effective amount of an active agent which is 4-biphenylyacetylene.

4,226,888

MANUFACTURE OF PASTA FILATA CHEESE

Cornelis Siecker, Woodford, Australia, assignor to Caboolture Co-Operative Associates Limited, Caboolture, Australia

Continuation-in-part of Ser. No. 832,098, Sep. 9, 1977, abandoned. This application Aug. 18, 1978, Ser. No. 934,968
Int. Cl.[2] A23C *19/02*
U.S. Cl. 426—36 5 Claims

1. A process for producing pasta filata cheese comprising the steps of:

(a) standarizing the milk;

(b) setting the milk;

(c) cutting, cooking and draining the resultant curd;

(d) sub-dividing the curd;

(e) dry salting the curd subsequently to or simultaneously with step (d);

(f) resting the salted curd for a period of at least 5 minutes to enable the salt to be thoroughly absorbed into the curd and until the curd has a titratable acidity between about 0.75 and about 0.95;

(g) mechanically stretching the curd in hot water for a period of from 4.5 to 6.5 minutes; and

(h) cooling and shaping the cheese.

4,226,889

COSMETIC STICK COMPOSITION

Edward R. Yuhas, Yonkers, N.Y., assignor to Dragoco, Inc., Totowa, N.J.

Filed Dec. 19, 1978, Ser. No. 971,113
Int. Cl.[2] A61K *7/42, 7/44, 31/055, 7/021*
U.S. Cl. 424—59 23 Claims

1. A cosmetic stick-type composition consisting essentially of:

(1) an aqueous sodium stearate-water vehicle formed of:

(a) 100 parts by weight of water; and

(b) from about 1 to about 30 parts by weight of sodium stearate; and

(2) from about 0.05 to about 50 weight percent, based upon the total weight of the composition, of at least one cosmetic active ingredient intended to be deposited on human skin, which ingredient is stable in the aqueous alkaline environment provided by said sodium stearate-water vehicle.

4,226,890

MEAT ANALOG COMPOSITIONS

Norman B. Howard, Oxford, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 28, 1978, Ser. No. 900,956
Int. Cl.[2] A23J *3/00*
U.S. Cl. 426—92 8 Claims

1. A meat analog product comprising texturized protein material, binder, lipid and a food additive composition comprising:

(a) an emulsifier selected from the group consisting of polyglycerol monoesters of fatty acids; monoacylglycerol esters of dicarboxylic acids; sucrose monoesters of fatty acids; polyol monoesters of fatty acids; phospholipids; and mixtures thereof;

(b) water, the ratio of emulsifier to water being in the range of from 1:10 to 10:1; and

(c) a food additive selected from the group consisting of flavoring agents; coloring agents, fats, sugars, ground meat, and mixtures thereof, said composition being in a liquid crystalline state which is stable from about 98° F. to about 200° F.

4,226,891
TREATMENT OF ROBUSTA COFFEE

Neal A. Lewis, Mason, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 909,247, May 24, 1978, abandoned, which is a continuation of Ser. No. 764,933, Feb. 2, 1977, abandoned. This application Nov. 30, 1978, Ser. No. 965,006
Int. Cl.³ A23F 5/16
U.S. Cl. 426—430 13 Claims

1. A process for preparing an improved, substantially non-decaffeinated Robusta coffee comprising:

(1) contacting roast and ground Robusta coffee beans with a single phase non-chlorinated organic solvent system having a boiling point below 200° F. and having less than about 10% water comprising a major portion of acetone and a minor portion of low molecular weight alcohol having from 1 to 3 carbon atoms, the weight ratio of beans:solvent system being in the range of from about 2:1 to about 1:5, for from about 1 minute to about 20 minutes; and

(2) removing said solvent system from contact with said coffee.

4,226,892
FLAVORING WITH CYCLOALIPHATIC UNSATURATED KETONES

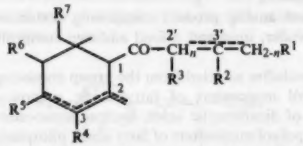
Ervin Kovats, Lausanne; Edouard Demole, Geneva; Günther Ohloff, Bernex, all of Switzerland, and Max Stoll, deceased, late of Lully, Switzerland (by Suzanne Stoll, executrix), assignors to Firmenich SA, Geneva, Switzerland

Continuation of Ser. No. 676,505, Apr. 13, 1976, abandoned, which is a division of Ser. No. 503,738, Sep. 6, 1974, Pat. No. 3,975,310, which is a division of Ser. No. 35,594, May 7, 1970, abandoned, which is a continuation-in-part of Ser. No. 774,179, Nov. 7, 1968, abandoned. This application Apr. 27, 1978, Ser. No. 900,522

Claims priority, application Switzerland, Nov. 9, 1967, 15667/67; Nov. 1, 1968, 16309/68; May 7, 1969, 6976/69; Aug. 8, 1969, 12065/69; Apr. 4, 1970, 5559/70; Apr. 17, 1970, 5725/70

Int. Cl.³ A23L 1/226, 1/235
U.S. Cl. 426—538 14 Claims

1. A flavouring composition to develop fruity, herb-like, winy, woody, floral or waxy flavour notes from about 0.1% to 15% by weight of a substantially pure compound having the formula



containing one double bond in position 2'- or 3'- of the acyl side-chain and either one double bond in position 1- or 2- or two conjugated double bonds in positions 1- and 3- of the ring, the double bonds being represented by dotted lines, and wherein n is zero or 1, R^1, and R^3 represents hydrogen or one of them a lower alkyl radical and others hydrogen, and R^4, R^5, R^6 and R^7 represent hydrogen or one of them a lower alkyl radical and the others hydrogen.

4,226,893
PROCESS FOR THE PRODUCTION OF FOAM PRODUCTS SIMILAR TO EGG WHITE FROM MILK SERUM

Denis Pâquet; Kaing S. Thou, and Charles Alais, all of Nancy, France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly, France

Filed Aug. 24, 1978, Ser. No. 936,250
Claims priority, application France, Aug. 14, 1977, 77 27797
Int. Cl.² A23J 3/02
U.S. Cl. 426—564 21 Claims

1. Process for producing a foamable product useful as an egg white substitute, said process comprising:

(a) taking the pH of a milk serum based solution having a protein content of the order of 2 to 15%, to a value comprised between 2 and 6;

(b) bringing the temperature of said solution to a temperature comprised between about 45° C. and 80° C. within about 1 to 10 minutes and maintaining said temperature for about 5 to 20 minutes;

(c) rapidly cooling said solution to a temperature comprised between about 15°and 20° C.; and

(d) alkalinising said solution to a pH comprised between about 7 and 9.

4,226,894
HYDRATED STABLE FLUENT SHORTENING CONTAINING SOLID PHASE EMULSIFIER COMPONENTS

Ilija Gawrilow, Strongsville, Ohio, assignor to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 747,296, Dec. 3, 1976, Pat. No. 4,137,338. This application Nov. 13, 1978, Ser. No. 959,728
Int. Cl.³ A23D 5/00
U.S. Cl. 426—606 7 Claims

1. A temperature stable fluent shortening for yeast-raised products, to provide improved dough conditioning and anti-staling properties, consisting essentially of

an emulsifier concentrate comprising a normally liquid or soft partial glycerol ester emulsifier having an Iodine Value in the range of about 40–150, an ethoxylated fatty acid ester emulsifier, a solid beta-phase crystalline food emulsifier, and optionally soybean stearine in the proportions of about 4–10 parts glycerol ester, about 2–8 parts ethoxylated fatty acid ester, about 2–8 parts crystalline food emulsifier, and about 0–3 parts stearine;

said ethoxylated fatty acid ester emulsifier being an ethoxylated fatty acid ester of glycerol, polyglycerols, propylene glycol, hexitol, hexitan and isohexide, or a fatty acid ester of ethoxylated glycerol, hexitol, hexitan and iso-hexide.

a liquid vegetable oil in the proportion of about 40–70 weight parts vegetable oil to about 8–29 parts emulsifier concentrate; and

water, emulsified with said oil and emulsifier concentrate in the proportion of about 45–75% water to about 25–55% lipoidal materials.

4,226,895
FLAVORED SPREADABLE EMULSION

Donald E. Miller, Strongsville, and Charles E. Werstak, Medina, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 930,037, Aug. 1, 1978, abandoned. This application Feb. 1, 1979, Ser. No. 8,521
Int. Cl.³ A23L 1/09
U.S. Cl. 426—658 9 Claims

1. A flavored, spreadable emulsion which is non-pourable over a wide temperature range including room temperature and which is readily spreadable at elevated temperatures above about 110° F. consisting essentially of, based on the total weight of the emulsion, about 8% to about 15% vegetable fat,

water and sweetening agent, in the proportion of about 3–4:1 sweetening agent to water, a bodying amount of stabilizing agent, and emulsifying amounts of an oil-in-water emulsifier and water dispersible or soluble protein, the relative proportions of emulsifier and protein being those necessary to maintain said non-pourable but spreadable emulsion consistency, said stabilizing agent, emulsifier and protein in combination comprising less than about 10% by weight of the emulsion; said fat having a Wiley Melting Point in the range of about 90° to about 115° F., and an approximate solid-fat index of:

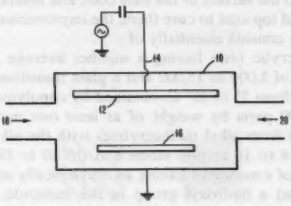
Temperature, °F.	Approximate Solid-Fat Index
50	65 ± 10
92	more than 18
100	11 max.

4,226,896

PLASMA METHOD FOR FORMING A METAL CONTAINING POLYMER

John W. Coburn, and Eric Kay, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1977, Ser. No. 863,826
Int. Cl.[2] B05D *1/10*; C23C *13/02*
U.S. Cl. 427—34 **8 Claims**



1. A plasma process for forming a polymer film containing metal therein comprising the steps of:
providing a closed vacuum system having gas input means and gas exhaust means;
providing a first electrode in said system of a metal adapted to be plasma etched by a halogen to form a volatile halide;
providing a substrate in said system in spaced relation to said first electrode and adapted to have a polymer film deposited thereon;
passing a halocarbon monomer through said system, said monomer plasma etching said first electrode to form a volatile halide and forming at the same time a stable polymer on said substrate when a glow discharge is established by the application of a suitable voltage to said first electrode; and
applying a suitable voltage to said first electrode whereby metal plasma etched from said first electrode is incorporated into the polymer film that is deposited on said substrate.

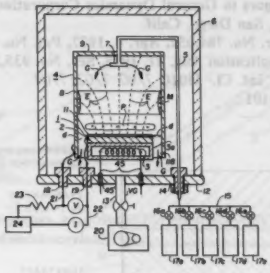
4,226,897

METHOD OF FORMING SEMICONDUCTING MATERIALS AND BARRIERS

John H. Coleman, Locust Valley, N.Y., assignor to Plasma Physics Corporation, Locust Valley, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,690
Int. Cl.[2] B05D *3/06*
U.S. Cl. 427—39 **38 Claims**

2. The method of producing a film on the surface of a substrate in an evacuated enclosure, which includes the steps of introducing a gaseous material at sub-atmospheric pressure in the region of said surface, applying to said surface a spatially non-uniform electric field having a weak field region extending over a portion of said surface and controlling said pressure to



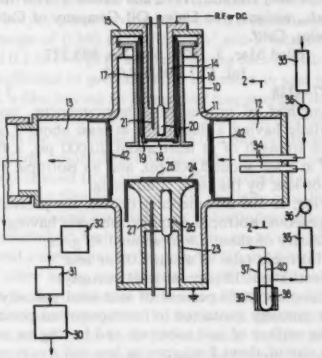
maintain a glow-discharge in said weak field region adjacent said portion of said surface to produce a substantially uniform film on said portion of said surface.

4,226,898

AMORPHOUS SEMICONDUCTORS EQUIVALENT TO CRYSTALLINE SEMICONDUCTORS PRODUCED BY A GLOW DISCHARGE PROCESS

Stanford R. Ovshinsky, Bloomfield Hills, and Arun Madan, Rochester, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Mar. 16, 1978, Ser. No. 887,353
Int. Cl.[2] H01L *45/00*
U.S. Cl. 427—39 **57 Claims**



1. The method of making a semiconductor film comprising a solid amorphous semiconductor host matrix including at least one element and having electronic configurations which have an energy gap and a density of localized states therein, said method comprising depositing on a substrate a solid amorphous semiconductor host matrix including at least one element by glow discharge decomposition of a compound containing said at least one element and at least one alterant element in a partial vacuum having an atmosphere separately containing at least one different alterant element and not derived from the compound, wherein said different at least one alterant elements of said compound and separately contained in said atmosphere comprise at least fluorine and are incorporated in said amorphous semiconductor host matrix during deposition thereof yelding an altered amorphous semiconductor material having altered electronic configurations with a reduced density of localized states in the energy gap.

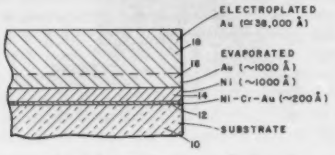
4,226,899
METHOD FOR FABRICATING CONTROLLED TCR THIN FILM RESISTORS

Ronald A. Thiel, and Edward H. Maurer, both of San Diego, Calif., assignors to General Dynamics Corporation Electronics Division, San Diego, Calif.

Division of Ser. No. 784,052, Apr. 4, 1977, Pat. No. 4,164,607. This application Aug. 21, 1978, Ser. No. 935,307

Int. Cl.² H01C *7/00, 7/02, 7/04*

U.S. Cl. 427—101 **13 Claims**



1. A method of fabricating thin film resistors comprising the steps of:

selecting a dielectric substrate, and

co-deposit preselected percentages of gold, nickel and chromium on said substrate forming a resistive film of not more than 5,000 angstroms in thickness of an alloy consisting of gold, nickel and chromium wherein the percentage of gold is no greater than the combined percentage of nickel and chromium.

4,226,900
MANUFACTURE OF HIGH DENSITY, HIGH STRENGTH ISOTROPIC GRAPHITE

Robert K. Carlson, Decatur, Tex., and James J. Ferritto, Saginaw, Mich., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Mar. 3, 1978, Ser. No. 883,227

Int. Cl.² B05D *3/02*

U.S. Cl. 427—228 **7 Claims**

1. The method of producing a homogeneous, isotropic, graphite article having a density of at least about 2 g/cc, a compressive strength of at least about 20,000 psi, a flexural strength of at least about 8,000 psi, and an isotropic ratio of about 1.05 or less, by the steps comprising

(a) reducing, to 100 mm mercury or less, the pressure on a homogeneous, isotropic graphite substrate having

(1) a density of about 1.6 to about 1.95 g/cc;

(2) an isotropic ratio of about 1.05 or less;

(3) at least about 15 percent total porosity;

(4) at least about 50 percent of said total porosity being open porosity contained in interconnected pores open to the surface of said substrate and having an average pore size of about 5 microns or less and a narrow pore size distribution in which at least 90 percent of said open porosity is contained in pores having diameters of less than about 20 microns;

(b) covering said substrate while under said reduced pressure with a fluid, carbonizable impregnant selected from (1) phenolic and furfural alcohol resins, and (2) petroleum and coal tar pitches having melting points of about 200° C. or less, carbon/hydrogen atom ratios of at least about 1.6, carbon residue values of at least about 60 percent, and less than about 20 weight percent benzene insolubles, at a temperature of at least about 20° C. above the melting point of said impregnant;

(c) impregnating said substrate and carbonizing said impregnant within said substrate by (1) pressurizing said substrate, while covered with said impregnant, up to a pressure of at least about 10,000 psi and less than about 30,000 psi, (2) heating said substrate up to a temperature of at least about 600° C. correlated with said pressure to maintain the combination of said impregnant and substrate at a pressure of at least about 10,000 psi and less than about 30,000 psi and a temperature of at least about 600° C. for a period of time sufficient to impregnate at least about 80% of said open porosity with said impregnant and carbonize said impregnant within said open porosity; and

(d) graphitizing the resulting carbonized, impregnated substrate by heating it to a temperature of at least about 2400° C., said impregnating, carbonizing and graphitizing steps being conducted at pressures below about 30,000 psi and under pressures correlated with temperatures so that at temperatures above 1800° C. said graphite substrate is not exposed to any substantial pressure capable of increasing said isotropic ratio.

4,226,901
METHOD FOR METALLIC FINISH COATING

Shinji Sugiura; Tadashi Watanabe, and Satoru Ito, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Nov. 20, 1978, Ser. No. 962,034

Claims priority, application Japan, Nov. 25, 1977, 52/141281

Int. Cl.² B05D *3/02*

U.S. Cl. 427—385.5 **3 Claims**

1. In a method for applying a metallic finish coat to a substrate which comprises applying a base coat composed of a metallic paint containing a thermosetting resin as a film-forming ingredient to a substrate, applying a top coat composed of a clear paint containing a thermosetting resin as a film-forming ingredient to the surface of the base coat, and heating both the base coat and top coat to cure them, the improvement wherein the top coat consists essentially of

(A) an acrylic resin having a number average molecular weight of 5,000 to 15,000 and a glass transition temperature of from 5° to 35° C. obtained by copolymerizing (a) 42 to 90 parts by weight of at least one methacrylate selected from alkyl methacrylates with the alkyl moiety having 4 to 18 carbon atoms and (b) 10 to 58 parts by weight of a monomer having an ethylenically unsaturated bond and a hydroxyl group in the molecule, the total amount of components (a) and (b) being 100 parts by weight, and

(B) an aminoaldehyde resin, the weight ratio of the acrylic resin (A) to the aminoaldehyde resin (B) being from 80:20 to 65:35.

4,226,902
DECORATIVE DEVICE

Robert E. Webb, 4710 Grizzard Rd., Huntsville, Ala. 35810

Filed Feb. 9, 1979, Ser. No. 10,629

Int. Cl.² A47G *33/00*

U.S. Cl. 428—7 **7 Claims**

1. A decorative device for decorating a supporting surface, said decorative device comprising

an inflatable gas-tight envelope having a substantially flat sheet-like back with an edge defining the border thereof, the edge providing a flat margin around the envelope, the

envelope presenting a three-dimensional item when inflated;

valve means in said envelope for selectively inflating and deflating said envelope; and

adhesive means on the back of said envelope in the area of the edge thereof on the flat margin for removably affixing said envelope to a supporting surface.

4,226,903

ELECTRICAL INSULATING SHEET MATERIAL AND ELECTRICAL WINDING MADE THEREFROM

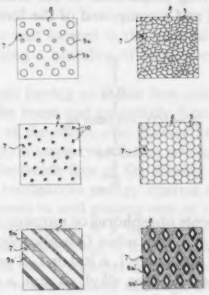
William H. Gottung, Ballston Lake, and Kevork A. Torossian, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 836,095, Sep. 23, 1977. This application Aug. 25, 1978, Ser. No. 936,961

The portion of the term of this patent subsequent to Aug. 7, 1996, has been disclaimed.

Int. Cl.[3] **B32B** *7/14;* **D02G** *3/00;* **H02K** *15/12*

U.S. Cl. 428—195 **8 Claims**



1. An electrical insulating sheet material comprising a sheet of aramid paper, a coating of thermosetting resinous adhesive material in a solid but heat bondable state and substantially uniformly distributed over at least one side of the aramid paper sheet, and a pressure sensitive adhesive material applied in a pattern to at least one side of the resin-coated aramid paper sheet, said pattern being of predetermined configuration to limit to a predetermined maximum distance the spacing between any point on the sheet not covered with pressure sensitive adhesive material and the closest point in the pattern of pressure sensitive adhesive material, said pressure sensitive adhesive material having a predetermined peel strength sufficient to hold the paper to a surface before the thermosetting adhesive is bonded thereto.

4,226,904

POLYMETHYL METHACRYLATE-POLYVINYLIDENE FLUORIDE LAMINATES AND METHOD

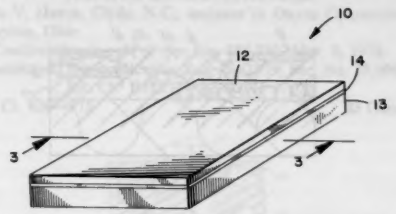
Jean-Paul Ollivier, Paris, and Albert Strassel, Oullins, both of France, assignors to Produits Chimiques Ugine Kuhlmann, France

Filed Nov. 27, 1978, Ser. No. 963,801

Int. Cl.[2] **B32B** *7/02, 27/08*

U.S. Cl. 428—212 **3 Claims**

1. A laminate comprising a polymethyl methacrylate layer having coated on at least one surface thereof a layer of a polyvinylidene fluoride having a maximum thickness one-tenth of the thickness of the polymethyl methacrylate with the thickness of the polyvinylidene fluoride coating being no greater than 400 microns and an intermediate layer having the same



optical properties as polymethyl methacrylate comprising a polymethyl methacrylate layer.

4,226,905

MANUFACTURE OF FILM FROM PARTIALLY CROSSLINKED POLYETHYLENE

David A. Harbourne, Kingston, Canada, assignor to Du Pont Canada Inc., Montreal, Canada

Filed Apr. 16, 1979, Ser. No. 30,708

Claims priority, application United Kingdom, Apr. 18, 1978, 15202/78

Int. Cl.[2] **B29D** *23/04;* **C08F** *110/02*

U.S. Cl. 428—220 **15 Claims**

1. A blown film process in which partially crosslinked polyethylene is extruded into film having a thickness in the range of 10 to 100 μm, said process having a blow-up ratio in the range of 1.2:1 to 4:1 and a MD draw down ratio in the range of 2 to 60, said polyethylene having had before crosslinking, a density in the range of 0.940 to 0.970 g/cm^3 and a melt index in the range of 0.2 to 15.0 g/10 min and having been crosslinked to an extent sufficient to provide, after extrusion in said blown film process, a film having an Elmendorf tear strength in the transverse direction substantially less than the Elmendorf tear strength in the transverse direction of a film produced from the polyethylene, before crosslinking, under the same conditions as the film produced from the partially crosslinked polyethylene.

12. A blown film produced from partially crosslinked polyethylene consisting essentially of polyethylene which, before being crosslinked, had a density in the range of 0.940 to 0.970 g/cm^3 and a melt index in the range of 0.2 to 15.0 g/10 min. and which, after being crosslinked, exhibits an Elmendorf tear strength in the transverse direction substantially less than the Elmendorf tear strength in the transverse direction of a blown film produced from such polyethylene before being crosslinked under the same conditions as the film produced from the partially crosslinked polyethylene.

4,226,906

MICROPOROUS COATED FABRICS FROM CLUSTERED MICROSPHERES

Ezekiel J. Jacob, Brooklyn, N.Y., assignor to John Brian Hayworth, Westport, Conn.

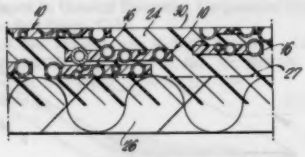
Filed Aug. 14, 1978, Ser. No. 933,541

Int. Cl.[3] **B32B** *5/16, 27/14*

U.S. Cl. 428—283 **10 Claims**

1. A microporous plastic composition comprising a synthetic resin matrix and a network of domains dispersed throughout said matrix; each of said domains comprised of plurality of porous microspheres bonded together with a bonding agent

that is insoluble in the synthetic resin matrix; said composition having a relatively uniform gas permeability.



3. The composition according to claim 1, wherein said domains are comprised of vitreous rhyolitic tuff.

4,226,907

FLAME RETARDANT ARTICLE

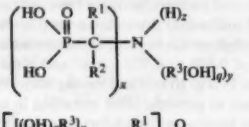
Kenneth J. Sienkowski; Richard R. Nicholson, both of Ann Arbor, Mich., and Ray E. Smith, Lake Buena Vista, Fla., assignors to Velsicol Chemical Corporation, Chicago, Ill.

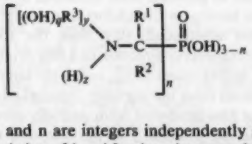
Continuation-in-part of Ser. No. 966,930, Dec. 6, 1978. This application Sep. 17, 1979, Ser. No. 76,098

Int. Cl.³ C09D 5/18; D04H 1/58

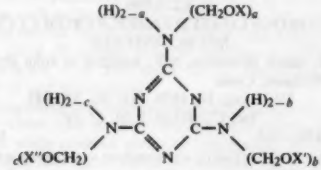
U.S. Cl. 428—288 **10 Claims**

1. A flame retardant article comprising an article treated with a flame-retardingly effective amount of an intumescent composition comprising a hydroxyalkyl amino alkyl phosphonic acid, a cyclic nitrogen compound, and water, wherein said phosphonic acid is selected from the group consisting of





wherein x, y, and n are integers independently selected from the group consisting of 1 and 2, q is an integer selected from the group consisting of 1, 2, and 3, z is an integer selected from the group consisting of 0 and 1, R^1 and R^2 are independently selected from the group consisting of hydrogen, alkyl radicals containing from about 1 to about 6 carbon atoms, and haloalkyl radicals containing from about 1 to about 6 carbon atoms, and R^3 is selected from the group consisting of alkyl radicals containing from about 1 to about 6 carbon atoms and haloalkyl radicals containing from about 3 to about 6 carbon atoms, provided that the total number of carbon atoms in the R^1, R^2, and R^3 groups does not exceed about 14; and wherein said cyclic nitrogen compound is



wherein a, b, and c are integers selected from the group consisting of 1 and 2, a plus b plus c equal about 3 to 6, and X, X', and X'' are independently selected from the group consisting of hydrogen and $—CH_3$.

4,226,908

WATER REPELLENT INORGANIC FOAM AND METHOD FOR PRODUCING THE SAME

Akira Yoshino, Yokohama; Isamu Iwami, Zushi, and Tsuneo Wakabayashi, Yokohama, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

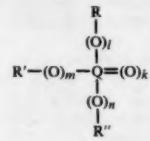
Filed Dec. 7, 1977, Ser. No. 858,296

Claims priority, application Japan, Jun. 20, 1977, 52/73067; Sep. 20, 1977, 52/112194

Int. Cl.² C04B 21/00; C07F 9/22, 9/06; B32B 5/18

U.S. Cl. 428—310 **17 Claims**

1. In an inorganic foamed article comprising a metallic salt of phosphoric acid, the improvement which comprises imparting water repellency to said article by chemically bonding hydrophobic groups to said salt, said hydrophobic groups being formed during preparation of the article by a reaction between said salt and a compound of the formula (I):



(I)

wherein Q represents phosphorus or nitrogen and k, l, m and n are integers of 0 or 1 and, when Q is phosphorus,

(1) k is 0 or 1, l and m are 1, n is 0 or 1, R and R′ are hydrogen atoms, and R″ is an alkyl, an aryl, a substituted alkyl or a substituted aryl; or

(2) k is 0 or 1, l is 1, m and n are each 0 or 1, R is hydrogen and R′ and R″ are each an alkyl, an aryl, a substituted alkyl or a substituted aryl, and

when Q is nitrogen, k, l, m and n are 0, R, R′ and R″ are each hydrogen, an alkyl, an aryl, a substituted alkyl or a substituted aryl, with the proviso that the case where R, R′ and R″ are all hydrogen is excluded.

4,226,909

COBALT-DOPED ACICULAR HYPER-MAGNETITE PARTICLES

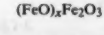
Thomas M. Kanten, Baldwin, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 736,744, Oct. 29, 1976, Pat. No. 4,137,342. This application Aug. 21, 1978, Ser. No. 935,749

Int. Cl.² C01G 49/06, 49/08

U.S. Cl. 428—329 **4 Claims**

1. Acicular particles useful for magnetic recording media, each haviang a core consisting essentially of acicular

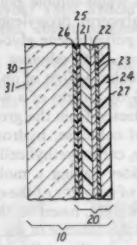


wherein x is greater than one and not greater than 1.5, and a surface layer comprising a cobalt compound, the cobalt being substantially only at the surface and providing 1–10% by weight of the particle.

4,226,910
ENERGY CONTROL SHEET HAVING INSULATIVE PROPERTIES

Richard R. Dahlen, White Bear Lake, Minn.; Richard L. Hansen, West Chester, Pa., and Richard L. Weiher, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 867,321, Jan. 5, 1978, abandoned. This application Jul. 12, 1979, Ser. No. 56,905
Int. Cl.³ B32B 17/10, 15/08
U.S. Cl. 428—336 12 Claims



1. In a window unit located in the external wall of a room, said unit comprising a plurality of transparent strata and including at least

(a) a glazing unit having an inside face oriented toward the interior of the room and an outside face oriented toward the exterior of the room, said glazing unit comprising at least one rigid transparent stratum whose inner face coincides with the inside face of the glazing unit, and

(b) a flexible, transparent energy control stratum which is located adjacent to said glazing unit or one of its component strata and which is a flexible, unitary multi-layer sheet material comprising a transparent-reflective metal layer bonded to a transparent polymeric support foil which has low transmission and high absorption properties with respect to infra-red energy in the 4–40 micrometer wave length, said metal layer being covered by a transparent polymeric protective layer and having a sheet resistance of less than 20 ohms/square,

the improvement wherein (1) the transparent polymeric layer is selected from polymers which, in thicknesses on the order of 5–50 micrometers, transmit at least about 80% of the normal room temperature infra-red radiant energy in the wavelength of 4–40 micrometers,

and (2) the energy control stratum is located other than adjacent the outside face of the glazing unit and is oriented so that the protective layer confronts an air space and does not contact any surface of the glazing unit,

whereby said window unit not only effectively excludes externally originating heat and glare in hot weather but also returns to the room at least about 55% of the internally originating infra-red energy impinging on said window unit and thereby significantly improves the insulative effectiveness of said window unit in cold weather.

7. A thin, flexible, self-sustaining transparent reflective sheet material for making the energy control stratum in the window unit of claim 1, said sheet material comprising in laminar combination:

(a) a self-sustaining flexible, transparent biaxially oriented polyethylene terephthalate foil having first and second faces,

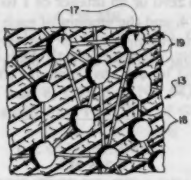
(b) a transparent-reflective metal layer adhered to the first face of said polyethylene terephthalate foil, and

(c) protectively covering said metal layer, a flexible, transparent layer of a polymeric material which, in thicknesses of 5–50 micrometers, transmits at least about 80% of infra-red radiant energy in the wavelength of 4–40 micrometers.

4,226,911
MICROPOROUS ELASTOMERIC MATERIAL AND METHOD OF MANUFACTURE

Doyle V. Haren, Clyde, N.C., assignor to Dayco Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 884,792, Mar. 9, 1978, abandoned. This application Feb. 26, 1979, Ser. No. 15,098
Int. Cl.³ B41J 27/20; B29D 27/00
U.S. Cl. 428—375 23 Claims



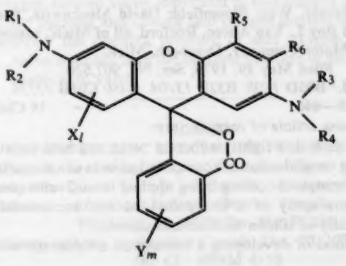
1. An article capable of taking up and dispersing a liquid substance which comprises an elastomeric matrix having interconnecting cavities distributed therethrough and having from about 1 to about 100 parts per 100 parts by weight of elastomeric material of discrete fibers dispersed therethrough, said fibers having a diameter in the range of about 0.0005 to about 0.004 inch and a length in the range of about 0.005 to about 0.250 inch, wherein said fibers increase the liquid take-up and dispensing capability of said article.

4,226,912
HEAT-SENSITIVE RECORDING MATERIAL

Hiroshi Iwasaki, Kawanishi; Takeshi Murakami, Osaka, and Mitsuru Kondo, Hyogo, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Feb. 2, 1979, Ser. No. 9,083
Claims priority, application Japan, Feb. 15, 1978, 53-16695
Int. Cl.² B41M 5/18
U.S. Cl. 428—411 12 Claims

1. In a black color developing heat-sensitive recording material comprising a base sheet and a color developing layer formed on at least one surface of the base sheet, said color developing layer including colorless or light-colored chromogenic material and acceptor which is reactive with said chromogenic material to develop a black color, an improvement that at least 60% by weight of said chromogenic material comprises at least two kinds of black color developing fluoran compounds having the same blackish hue and having the general formula



(I)

where each R_1, R_2, R_3 and R_4 represents hydrogen, alkyl, alicyclic, aryl or aralkyl, each of which may have at least one substituent selected from the group consisting of halogen, alkyl, halogenated alkyl, cyanoalkyl, alicyclic, aryl, aralkyl, hydroxyl, alkoxyl, phenoxyl, acyl, carboxyl, alkoxycarbonyl, amino, substituted amino, cyano and nitro, R_1 may cooperate with R_2 to form a heterocyclic ring and R_3 may cooperate with

R_4 to form a heterocyclic ring; R_5 represents hydrogen, halogen, alkyl, halogenated alkyl, cyanoalkyl, alkoxyl, aralkyl or substituted amino; R_6 represents hydrogen, halogen, alkyl, halogenated alkyl, cyanoalkyl or aralkyl; R_5 may cooperate with R_6 to form an aromatic ring; X represents halogen, alkyl, halogenated alkyl, cyanoalkyl or alkoxyl; Y represents halogen, alkyl, alicyclic, halogenated alkyl, cyanoalkyl, alkoxyl, aralkyl, aryl, acyl, amino, substituted amino or nitro; Y may form an aromatic ring together with the benzene ring to which Y is attached; l is zero or an integer of 1 to 2 and m is zero or an integer of 1 to 4, and the amount of each of said black color developing fluoran compounds is not larger than 90% by weight of the total amount of said black color developing fluoran compounds.

4,226,913

POLYPARABANIC ACID/COPPER FOIL LAMINATES OBTAINED BY DIRECT SOLUTION CASTING

Don J. Henderson, Worthington, Ohio, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 832,760, Sep. 12, 1977, Pat. No. 4,148,969, which is a continuation of Ser. No. 663,596, Mar. 3, 1976, abandoned, which is a continuation of Ser. No. 464,359, Apr. 26, 1974, abandoned. This application Dec. 18, 1978, Ser. No. 970,605

Int. Cl.[2] **B32B** *15/08, 27/08*

U.S. Cl. 428—421 **11 Claims**

1. A process of forming coated articles of polyparabanic acid strongly adhered to a supportive substrate which comprises in combination the steps of:

(a) forming a solution of polyparabanic acid with an inherent viscosity of 0.4–2.5 and a Brookfield viscosity of from 1000 to 50,000 cps, at least 25% of the polyparabanic acid being of an aromatic type,

(b) coating a thin layer of said solution directly on a substrate in the absence of intermediate adhesives,

(c) heating said thin layer of polyparabanic acid solution to evaporate the solvent from said film and,

(d) recovering a coated article having a relatively dry layer of polyparabanic acid strongly adhered directly to said substrate.

4,226,914

NOVEL SPRAYING COMPOSITION, METHOD OF APPLYING THE SAME AND ARTICLE PRODUCED THEREBY

Leslie L. Terner, West Bloomfield; David Moskowitz, Southfield, and Roy L. Van Alsten, Redford, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 19, 1978, Ser. No. 907,530

Int. Cl.[2] **B05D** *1/08;* **B32B** *13/04, 9/04;* **C01B** *31/36*

U.S. Cl. 428—446 **15 Claims**

1. As a new article of manufacture:

a substrate, and, a tightly adherent wear and heat resistant coating on said substrate composed of beta silicon carbide and silicon, said coating being applied to said substrate by a plasma spray of a finely divided mixture consisting essentially of silicon carbide and silicon.

6. A method of developing a coating on a substrate which comprises:

developing a plasma spray,

feeding a mixture of finely divided silicon carbide and silicon to said plasma spray, and

directing said plasma spray at an exposed surface of the substrate whereby said exposed surface is coated with a tightly adherent wear and heat resistant coating consisting essentially of beta silicon carbide and silicon.

4,226,915

PRESSURE-SENSITIVE ADHESIVE TAPE OR SHEET

Eiji Iijima, Sakura, and Yoshimi Nishimura, Funabashi, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Nov. 2, 1978, Ser. No. 957,083

Claims priority, application Japan, Nov. 16, 1977, 52-138281

Int. Cl.[3] **B32B** *25/04*

U.S. Cl. 428—492 **7 Claims**

1. A pressure-sensitive adhesive tape or sheet, comprising an air-permeable substrate having coated thereon a layer of an adhesive composition, said adhesive composition consisting essentially of a substantially homogeneous mixture of (a) 3 to 25% by weight of a water-soluble polyol selected from the group consisting of glycerin, propylene glycol, butylene glycol, hexylene glycol, polyethylene glycols having a molecular weight not higher than 1000, ethylene glycol, polypropylene glycol having a molecular weight of up to 1000, mannitol and sorbitol, (b) 1 to 25% by weight of a water-soluble or water-swellable polymer selected from the group consisting of polyvinyl alcohol, methyl cellulose, hydroxyethyl cellulose, hydroxypropyl cellulose, carboxyethyl cellulose, sodium alginate and polyethylene oxides having a molecular weight higher than 300,000, the sum of amounts of the components (a) and (b) being at least 6% by weight, based on the weight of the adhesive composition, and the balance of the adhesive composition essentially is a pressure-sensitive adhesive capable of adhering to and safe for use on

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4,226,916

FORCE TRANSMITTING LOOP MADE OF FIBER COMPOSITE MATERIAL

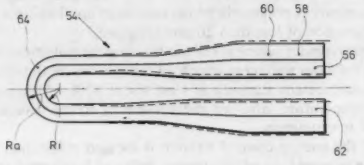
Ralf-Thilo Schulz, Putzbrunn; Klaus Brunsch, Weidach, and Rudolf Woerndle, Neubiberg, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Jul. 31, 1978, Ser. No. 929,278

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1977, 2736124

Int. Cl.[3] **B32B** *9/04;* **B29H** *9/02;* **F16G** *11/00*

U.S. Cl. 428—542 **11 Claims**



1. A force transmitting element of fiber composite material including reinforcing filaments embedded in a synthetic cured embedding material, comprising an open ended U-shaped member having a constant cross sectional area along the length of said open ended member and a cross-sectional configuration which varies along the length of said open ended member which is formed of an endless filament bundle initially wound onto a removable winding core means having a core proper and side wall means spaced from each other so that the spacing corresponds to said cross-sectional configuration which varies along the length of said open ended member having initially a closed loop form wherein after curing one end is removed by severing thereby forming said open ended U-shaped member.

10. A method for forming a force transmitting element of fiber filament composite material in the form of an open ended member comprising the following steps: providing removable core means having a core proper and side walls, spacing said side walls from each other so that the space between the walls has a constant cross-sectional area along the length of the core means and a cross-sectional configuration which varies along the length of the core means, winding a fiber filament impreg-

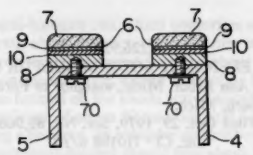
nated with a curable synthetic embedding material onto said core to form an endless loop, curing the synthetic embedding material, separating the endless loop from the core means, and severing said endless loop proximate one end to form said open ended U-shaped member, which has a constant cross-sectional area and a varying cross-sectional configuration along its length.

4,226,917

COMPOSITE JOINT SYSTEM INCLUDING COMPOSITE STRUCTURE OF CARBON FIBERS EMBEDDED IN COPPER MATRIX

Masao Tsuruoka; Hideyuki Yagi; Keiichi Morita, and Keiichi Kuniya, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 12, 1978, Ser. No. 895,590
Claims priority, application Japan, Apr. 15, 1977, 52-42550
Int. Cl.[2] B32B *15/14, 15/20;* **B60M** *5/00*
U.S. Cl. 428—614 **5 Claims**



1. A composite joint system having a composite structure containing a plurality of carbon fibers embedded in a copper matrix, said composite structure being joined through a brazing material to a member to be secured to said composite structure, wherein said brazing material is Al, and wherein between said composite structure and said brazing material is interposed a film of metal which prevents the direct contact of said brazing material with said composite structure and has a good wettability to both the composite structure material and said brazing material, said metal film including a first layer of Ni provided on said composite structure and a second layer of at least one selected from a group consisting of Cr, Mo, W, Ta, Ti, Zr, V, and an alloy of at least one of these metals and provided on said first layer.

3. A composite joint system having a composite structure containing a plurality of carbon fibers embedded in a copper matrix, the composite structure being joined through a brazing material to a member to be secured to said composite structure, wherein said brazing material is an Al brazing material, and wherein between said composite structure and said brazing material is interposed a film of metal which prevents the direct contact of said brazing material with said composite structure and has a good wettability to both the composite structure and said brazing material, said metal film including a first layer of Ni provided on said composite structure and a second layer of at least one selected from a group consisting of Cr, Mo, W, Ta, Ti, Zr, V and an alloy of at least one of these metals and provided on said first layer.

4,226,918

RUBBER ADHERENT TERNARY CU-ZN-NI ALLOY COATED STEEL WIRES

Raymond A. Friend, Niles, Mich., assignor to National-Standard Company, Niles, Mich.

Filed Aug. 3, 1978, Ser. No. 930,799
Int. Cl.[3] B32B *15/18*
U.S. Cl. 428—676 **5 Claims**

1. A ferrous wire for use as a reinforcement for rubber tires or rubber hose having a homogeneous alloy coating deposited thereon, said alloy coating comprised of between about 0.3–6.0% by weight of nickel, 60–75% by weight of copper and 40–25% by weight of zinc, with said homogeneous coating comprising of between about 0.25–16.0 grams by weight of coating per kilogram weight of the combined coating and wire.

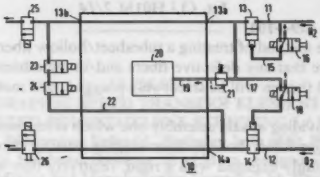
3. A ferrous bead wire for use as a reinforcement for rubber tires, said bead wire having a homogeneous alloy coating deposited thereon, said alloy coating comprised of between about 0.3–6.0% by weight of nickel, 50–75% by weight of copper and 50–25% by weight of zinc, with said alloy coating comprising of between about 0.25–1.25 gram by weight of coating per kilogram weight of the combined coating and wire.

4,226,919

HYDROGEN/OXYGEN FUEL CELL

Botho Stüwe, Fürth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 8, 1979, Ser. No. 64,887
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1978, 2836464
Int. Cl.[2] H01M *8/04*
U.S. Cl. 429—25 **3 Claims**



1. In an improved hydrogen/oxygen fuel cell of the type having a hydrogen gas feed line connected to said cell for the flow of hydrogen gas into said cell, and having an oxygen gas feed line connected to said cell for the flow of oxygen gas into said cell, said hydrogen gas feed line including a hydrogen diaphragm valve positioned therein which controls the flow of hydrogen gas into said cell, with a hydrogen control line for controlling said hydrogen diaphragm valve and a hydrogen control valve for opening and closing said hydrogen control line, and in which said oxygen feed line includes an oxygen diaphragm valve positioned therein which controls the flow of oxygen gas into said cell, with an oxygen control line for controlling said oxygen diaphragm valve, said improvement comprises:

a connection of said oxygen control line to said hydrogen feed line at a point upstream of said hydrogen diaphragm valve, and a downstream of the connection of said hydrogen feed line to said cell, which provides fluid communication between said oxygen control line and said hydrogen feed line;

oxygen control valve positioned in said oxygen control line for opening and closing said oxygen control line;

wherein the opening pressure of said oxygen diaphragm valve is higher than the opening pressure of said hydrogen diaphragm valve.

4,226,920

EXPANDED ZINC ELECTRODE FOR DRY CELLS

William A. Armstrong, Ottawa, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

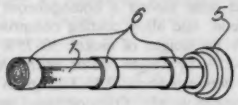
Filed Jun. 22, 1979, Ser. No. 51,234
Claims priority, application Canada, Oct. 20, 1978, 313887
Int. Cl.[2] H01M *6/10*
U.S. Cl. 429—94 **12 Claims**

1. An anode for a cylindrical electrochemical cell, comprising

(a) a sheet of a perforated electrochemically active material, said sheet being wound in the form of a coil, and

(b) spacer means providing substantially uniform spacing between adjacent layers of the coil, said spacer means

being in the form of a resilient strip-shaped material attached to said sheet material, the thickness of said strip



being about 0.001 to 0.005 inch to permit adequate flow of electrolyte between said adjacent layers.

4,226,921

SELECTIVE PLUGGING OF BROKEN FIBERS IN TUBESHEET-HOLLOW FIBER ASSEMBLIES

Floris Y. Tsang, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 16, 1979, Ser. No. 57,926
Int. Cl.[2] H01M *2/14*
U.S. Cl. 429—104 **9 Claims**

1. The method of treating a tubesheet/hollow fiber assembly to ensure that any defective fibers and/or tubesheet channels included therein will be selectively plugged, said method comprising

A. providing as said assembly one which comprises a bundle of gas-filled, hollow fiber lengths passing through and sealingly engaged with a rigid, relatively thin wall-member of tubesheet having first and second generally parallel faces, each of said lengths having an open end terminating in or protruding from said first face and at least a majority of said lengths having portions depending from said second face which have closed ends or are generally U-shaped loops having second open ends terminating in or protruding from said first face,

B. covering said first face with a body of a flowable, curable sealant and developing a pressure differential between said body and the exteriors of said dependent fiber portions, thereby

(1) causing said sealant to flow into the defective fibers and/or tubesheet channels and to displace therefrom at least a portion of the gas contained therein, and

(2) causing said sealant to flow into the open ends of the non-defective fibers to a limited extent determined by the resistance to compression of the gas they contain,

C. diluting the sealant external to the fibers,

D. subjecting the exteriors of said dependent fiber portions and the diluted sealant body to essentially the same reduced pressure, with the results that:

the gas in the non-defective fibers expands until the pressure inside them is the same as the pressure outside them,

the undiluted sealant in the non-defective fibers is expelled and the diluted sealant intrudes slightly into them,

the column of sealant in each defective fiber and tubesheet channel remains in place and no more than a small terminal portion of it is diluted,

E. While maintaining the pressure equilibrium established in step D, removing the main body of the diluted sealant from contact with the tubesheet,

F. optionally, rinsing said first face and open fiber ends with a diluent, and

G. curing the sealant in the defective fibers and/or tubesheet channels, thereby plugging them,

said sealant being so composed as to be convertible, in-situ in said defective fiber lengths or channels and at a temperature below the distortion temperature of said fibers, to plugs of a solid, non-porous material sealingly bonded to the fiber or channel walls and having a coefficient of expansion substantially matching that of the fiber material.

4,226,922

SODIUM SULFUR ELECTROCHEMICAL CELL OR BATTERY

Anthony F. Sammells, Naperville, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Aug. 9, 1979, Ser. No. 65,081
Int. Cl.[2] H01M *10/39*
U.S. Cl. 429—104 **11 Claims**

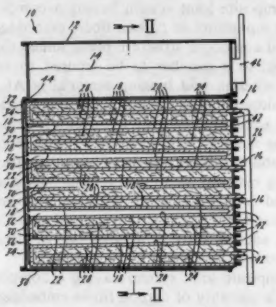
1. In a sodium/sulfur electrochemical cell or battery having at least one anode chamber with anodic reactant and at least one cathode chamber with cathodic reactant and separated from each other by a sodium ion conducting solid electrolyte and having a cathodic current collector in contact with the cathodic reactant, the improvement comprising said cathodic current collector comprising a boronized surface in contact with said cathodic reactant and an additional boron source in physical proximity to said boronized surface.

4,226,923

VOLUME EFFICIENT SODIUM SULFUR BATTERY

Mati Mikkor, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 29, 1979, Ser. No. 89,060
Int. Cl.[3] H01M *6/18*
U.S. Cl. 429—104 **4 Claims**



1. A sodium sulfur battery which comprises:

a plurality of box shaped sulfur electrodes, the outer surfaces of each of said electrodes being defined by an electrolyte material, each of said electrodes having length and width dimensions substantially greater than the thickness dimension thereof, each of said sulfur electrodes having an upwardly facing surface and downwardly facing surface;

electrode means contained in each of said box shaped sulfur electrodes, said electrode means for providing electrical access to each of said sulfur electrodes to an external electric circuit;

structure means for holding said plurality of box shaped sulfur electrodes in a stacked condition with an upwardly facing surface of one sulfur electrode in facing relationship to a downwardly facing surface of one sulfur electrode thereabove with a small thickness dimension separating the same, a volume thereby being defined between each pair of upwardly facing and downwardly facing surfaces of said sulfur electrode;

a reservoir means for containing sodium;

manifold means for connecting said volumes between said facing sulfur electrodes to said reservoir means; and

metering means for controlling the flow of sodium between said reservoir means and said manifold means.

4,226,924

THIN METAL-HALOGEN CELLS

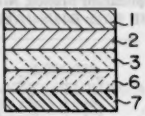
Muneaki Kimura; Tatsumi Arakawa, both of Fuji, Japan; Masaru Ozaki, Drexel Hill, Pa., and Hidehiko Kobayashi, Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 20, 1978, Ser. No. 962,359

Claims priority, application Japan, Nov. 22, 1977, 52/139419; Nov. 24, 1977, 52/139835; Jan. 24, 1978, 53/5826; Mar. 10, 1978, 53/26671; Mar. 10, 1978, 53/26672; Jul. 4, 1978, 53/80520

Int. Cl.[2] H01M *6/04*

U.S. Cl. 429—126 13 Claims



1. A thin metal-halogen cell which comprises an electroconductive substrate about 50 microns to 0.5 mm in thickness, a metal film anode active material layer of about 1 to 100 microns formed on the substrate, a solid electrolyte layer of about 1 to 20 microns formed on the anode active material, a cathode active material layer of about 50 microns to 0.5 mm thickness and comprising a halogen, an adhesive and carbonaceous powder, and an electroconductive plastic film about 50 microns to 0.5 mm thick, the cathode active material layer and the electroconductive plastic film being laminated on the solid electrolytic layer in this order.

4,226,925

BATTERY WITH INTERNAL ELECTRICAL CONNECTOR

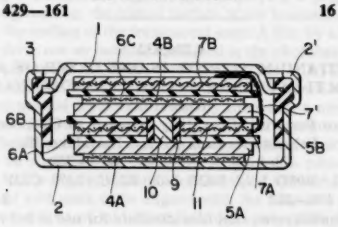
Hironosuke Ikeda, Hirakata, and Satoshi Narukawa, Kobe, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Feb. 16, 1979, Ser. No. 12,731

Claims priority, application Japan, Mar. 8, 1978, 53-80558[U]; Jun. 14, 1978, 53-83336[U]; Jun. 14, 1978, 53-83337[U]; Jun. 16, 1978, 53-83778[U]; Jun. 16, 1978, 53-83779[U]; Jul. 26, 1978, 53-103907[U]

Int. Cl.[2] H01M *2/26*

U.S. Cl. 429—161 16 Claims



1. A battery characterized in that:

between a pair of electrodes having one polarity, an electrode having the other polarity is interposed, with separator layers therebetween,

central bores are defined in said separator layers and said electrode having said other polarity,

an electrical contact member is passed through said central bores,

an insulating member is disposed between said electrical contact member and said electrode having said other polarity, and

each of both end surfaces of said electrical contact member is press-contacted with each of the opposite surfaces of said pair of electrodes having said one polarity,

whereby said pair of electrodes having said one polarity are electrically connected to each other by means of said electrical contact member.

4,226,926

FLEXIBLE, MICROPOROUS RUBBER BASE ARTICLES

Bruce S. Goldberg, Clifton, and Mahendra Shah, Newark, both of N.J., assignors to Amerace Corporation, New York, N.Y.

Filed Jun. 16, 1978, Ser. No. 915,915

Int. Cl.[3] H01M *2/16*; C08J *9/28*

U.S. Cl. 429—252 32 Claims

1. As an article of manufacture, a microporous, flexible shape of a sulfur-free, cured polymeric material selected from the group consisting of natural rubber, ethylenepropylene rubber, polyisoprene, styrene butadiene, nitrile-butadiene, and mixtures thereof, and a polyol acrylate, methacrylate, or mixtures thereof, as precursor curative, of a pore size less than 2 microns and of a predetermined flexibility.

4,226,927

PHOTOGRAPHIC SPEED TRANSFER ELEMENT WITH OXIDIZED POLYETHYLENE STRIPPING LAYER

Gerard H. Kinderman; Robert L. Rutledge, both of St. Paul, and Ronald S. Steelman, Oakdale, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 10, 1978, Ser. No. 904,547

Int. Cl.[3] G03C *1/90*; B65D *65/28*; B32B *3/06, 3/00*

U.S. Cl. 430—14 4 Claims

1. A photographic sheet material suitable for producing a dry transfer element, comprising a thin, flexible carrier substrate having a release coating thereon, said release coating comprising oxidized polyethylene, and overlying said release coating and releasably bonded thereby to said substrate a photosensitive layer comprising a silver halide emulsion, said photosensitive layer, after imagewise exposure thereof, development with a tanning developing agent and removal of the soluble portions of said layer, having greater adhesion to a receptor surface when applied thereto under pressure than the adhesion of said photosensitive layer to said carrier substrate under like pressure.

4,226,928

LAMINATED PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY

Toru Nakazawa, Osaka; Keiichi Nagahashi, Kaizuka, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company, Ltd., Osaka, Japan

Filed Jan. 5, 1978, Ser. No. 867,304

Claims priority, application Japan, Jan. 17, 1977, 52-2923

Int. Cl.[3] G03G *5/06*

U.S. Cl. 430—57 7 Claims

1. A laminated photosensitive material for electrophotography, which comprises an electrically conductive substrate, an intermediate photoconductive layer formed on the substrate and a top photoconductive layer laminated on said intermediae layer, wherein the intermediate photoconductive layer comprises, incorporated in a binder, (A) phthalocyanine or a phthalocyanine derivative and (B) a polycrylic aromatic nitro compound selected from the group consisting of trinitrofluorenone and tetranitrofluorenone at an (A):(B) mixing weight ratio of from 10:5 to 10:40 and the top photoconductive layer comprises (C) polyvinyl carbazole or a nuclear substitution derivative thereof and said polycyclic aromatic nitro compound (B) at a (C):(B) mixing weight ratio of from 1:1.7 to 1:2.2

4,226,929

FLEXIBLE MULTI-LAYER PHOTORECEPTOR OF ELECTROPHOTOGRAPHY

Toru Teshima, Yokohama; Hiroshi Nozaki, Chiba; Minoru Koyama, Tokyo, and Kazuhisa Katoh, Yokohama, all of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1978, Ser. No. 958,493

Claims priority, application Japan, Nov. 15, 1977, 52-136261

Int. Cl.³ G03G *5/082, 5/09*

U.S. Cl. 430—57 **6 Claims**

1. A photoreceptor for electrophotography comprising:

(1) a first layer of a Se-Te-Halogen alloy containing halogen in a weight ratio of 10^{-3} to 10^{-8} to the Se-Te-Halogen alloy and a Te content of about 5 to about 35% by weight of the Se-Te alloy, the thickness of said first layer being about 0.1 to 10 microns, said first layer formed on top of,

(2) a second layer of an Se-S-Halogen alloy containing halogen in a weight ratio of 10^{-2} to 10^{-7} to the Se-S-Halogen alloy and having a sulfur content of about 10 to about 35% by weight based on the Se-S alloy, the thickness of said second layer being about 10 to about 100 microns, said second layer formed on top of an electrically conductive substrate.

4,226,930

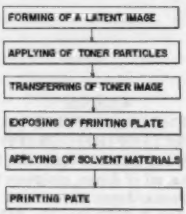
ELECTROPHOTOGRAPHIC METHOD FOR PRODUCING PHOTOPOLYMER PRINTING PLATE

Yasuyuki Takimoto, Takatsuki; Kunsei Tanabe, Hirakata; Shin Saito, Suita; Masakatsu Nishimura, Settsu, and Yasushi Umeda, Osaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 816,355, Jul. 18, 1977, abandoned, which is a continuation-in-part of Ser. No. 596,260, Jul. 16, 1975, abandoned. This application Nov. 8, 1978, Ser. No. 958,705

Int. Cl.² G03G *13/16;* **G03C** *1/68*

U.S. Cl. 430—126 **11 Claims**



1. A method of producing a photopolymer printing plate comprising the steps of

(a) forming a powder image on a photoconductive medium electrophotographically,

(b) transferring the powder image from the surface of the photoconductive medium directly onto a photopolymer printing plate by bringing the powder image bearing surface of the photoconductive medium and photosensitive resin layer surface of the photopolymer printing plate into close line contact with each other under a uniform pressure in the range from 1 to 40 Kg/linear cm of line contact and applying a rolling motion therebetween at a speed in the range from 1 to 10 cm/sec. and sufficient to cause an adhesion of the powder image onto the photosensitive resin layer surface of the photopolymer printing plate,

(c) exposing the entire powder image bearing surface of the photopolymer printing plate to a light, and

(d) applying solvent material to the exposed photopolymer printing plate thereby forming surface differentiations therein corresponding to the powder image.

4,226,931

PROCESS OF MAKING LITHOGRAPHIC PLATE, AND PLATE FROM PHOTOSENSITIVE ELEMENT

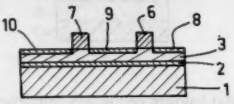
Ronald Neill, Paris, and Marcel Pigeon, Neuilly, both of France, assignors to L. A. Cellophane, Paris, France

Filed May 10, 1978, Ser. No. 904,579

Claims priority, application France, May 12, 1977, 77 14489

Int. Cl.² G03F *7/02;* **B41N** *1/00;* **B41M** *5/00*

U.S. Cl. 430—302 **6 Claims**



1. A lithographic printing plate comprising:

(a) a support,

(b) overlying the support (a) an anchoring layer having a thickness greater than about 200 angstroms comprising an hydrophobic oleophilic colloid ester which is capable of being rendered hydrophilic by an aqueous alkali solution,

(c) overlying the anchoring layer (b) and arranged according to a pattern to be printed, an hardened oleophilic polymer obtained by polymerizing a photosensitive resin layer by activation with actinic radiation through a transparency having opaque areas and transparent areas corresponding to the pattern to be printed whereby only the portions of the photosensitive layer corresponding to the transparent areas are polymerized and removing the non-polymerized unexposed portions of the photosensitive layer corresponding to the opaque areas, and

(d) an hydrophilic layer, corresponding to the opaque areas of the transparency, obtained by treating the portions of the anchoring layer (b) not covered by the hardened oleophilic polymer pattern with an aqueous alkali solution.

4,226,932

TITANIUM NITRIDE AS ONE LAYER OF A MULTI-LAYERED COATING INTENDED TO BE ETCHED

Giampiero Ferraris, Milan, Italy, assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jul. 5, 1979, Ser. No. 54,750

Int. Cl.³ B05D *5/12;* **B32B** *7/00;* **B23C** *15/00;* **C23F** *1/02*

U.S. Cl. 430—312 **8 Claims**

1. A multilayered thin film structure for use in hybrid integrated circuits comprising:

substrate means providing a base for said structure;

resistive means located on said substrate means;

an adhesive layer of titanium nitride located on said resistive means;

thermal diffusion barrier means located on said titanium nitride means;

conductive means located on said thermal diffusion barrier means;

said thermal diffusion barrier means functioning to prevent the diffusion of titanium included in said titanium nitride, to said conductive means in response to heat.

5. A method of making a multilayered thin film structure for use in hybrid integrated circuits, said method comprising:

a first step of placing a substrate in a vacuum station;

a second step of depositing on said substrate a layer of tantalum nitride, by means of sequential sputtering deposition;

a third step of depositing a layer of titanium on said layer of tantalum nitride and doping the titanium layer with nitrogen during sputtering to obtain a layer of titanium nitride;

a fourth step of depositing on said titanium nitride layer, a layer of palladium; and

a fifth step of depositing on said palladium layer, a layer of gold.

6. A method of making a multilayered thin film structure as claimed in claim 5, wherein there is further included:

a sixth step comprising withdrawal of said coated substrate from said vacuum station; and

a seventh step comprising photolithographing said coated substrate by means of a first selective chemical etching of said gold, palladium, titanium nitride and tantalum nitride layers so as to obtain a conductive circuit.

4,226,933

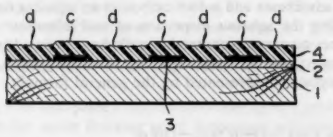
METHOD OF MANUFACTURING A DECORATIVE PANEL

Hideo Ishizawa, Tokyo; Akira Niwayama, Matsudo; Mitsuru Shimizu, Kamifukuoka, and Takashi Kagami, Tokyo, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1978, Ser. No. 964,296

Int. Cl.[2] G03F 5/00; G03C 1/90, 5/00

U.S. Cl. 430—320 **3 Claims**



1. A method of manufacturing a decorative panel producing a prominent impression of relief and solidity corresponding to a pattern appearing thereon which comprises the steps of laminating by an adhesive a pigment-containing sheet impressed with a pattern for color effect on a substrate; coating the surface of the laminate with a photohardening paint prepared from a photohardening synthetic resin mixed with a matting agent, photosensitizer and peroxide catalyst; tightly spreading a transparent smooth film displaying a prescribed degree of gloss over the coated surface of the laminate; lightly pressing the surface of the transparent smooth film by a rubber roller to drive out air bubbles contained in the photohardening paint; applying on the transparent smooth film a layer of an inert, nonvolatile, transparent liquid substance which remains viscous at normal temperature; tightly mounting a mask film which is selectively rendered transparent and opaque on the liquid substance so as to cause the transparent portions of said mask to be aligned with the whole or part of a pattern impressed on the pigment-containing sheet and also the opaque portions of said mask to be aligned with the whole or part of the other portions of said sheet than those which display the pattern; the layer of liquid substance wrapping or surrounding dust which may be present between the transparent smooth film and the mask film; gently pressing the surface of the mask by a rubber roller to expel air bubbles contained in the liquid substance projecting a light on the mask to effect the photohardening of the illuminated portions of the photohardening synthetic resin paint with the interior of the unilluminated portions of said paint hardened to a certain extent by the action of the peroxide catalyst; and removing the transparent smooth film and mask film when the illuminated portions of the photohardening synthetic resin paint are fully hardened and while the other unilluminated portions thereof are not sufficiently hardened, thereby causing the photohardened portions of the paint to take a convex form due to shrinkage, and to pull the adjacent unilluminated slowly hardening portions, the surface of said convex portions displaying the same glossy state as that of the film surface and also causing the other unilluminated portions to be pulled toward the illuminated portions to take a concave form and become matted by the action of the matting agent.

4,226,934

LIGHT SENSITIVE PHOTOGRAPHIC MATERIAL CONTAINING DEVELOPMENT INHIBITOR RELEASING COMPOUNDS

Terence C. Webb, Witham, and David L. R. Reeves, Brentwood, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

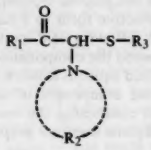
Filed Jul. 26, 1978, Ser. No. 928,211

Claims priority, application United Kingdom, Aug. 12, 1977, 33883/77

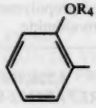
Int. Cl.[2] G03C 5/30

U.S. Cl. 430—443 **10 Claims**

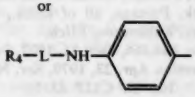
1. A light-sensitive photographic material which comprises, coated on a photobase, at least one silver halide emulsion layer, said emulsion layer or a layer adjacent
thereto containing a development inhibitor releasing compound of the formula



wherein R_1 is a group of the formulae

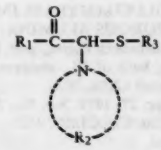


or



wherein L is $—SO_2—$ or —CO— and R_4 is a ballasting alkyl group or contains an unsubstituted or substituted ballasting alkyl group of at least 10 carbon atoms, R_2 represents the atoms necessary to complete a tetrazole, triazole, pyrazole or imidazole ring system which is unsubstituted or substituted by alkyl or alkylthio and R_3 is unsubstituted or substituted pyrimidyl, thiadiazolyl, triazinyl, tetrazolyl, triazolyl, pyridyl, phenyl or benzthiazolyl the groups $—S—R_3$ being the development inhibiting group.

6. A process for the production of a photographic image which comprises imagewise exposing a light-sensitive photographic silver halide material which contains in at least one silver halide layer or a layer adjacent thereto a compound of formula



wherein R_1, R_2 and R_3 have the meanings indicated in claim 1

and developing the exposed silver halide with a paraphenylene diamine colour developing agent thereby to liberate imagewise the group R_3-S⊖.

4,226,935

ENZYMATIC DIAGNOSTIC COMPOSITION

Murray C. Fusee, Ellicott City, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Aug. 7, 1978, Ser. No. 931,334
Int. Cl.[3] C12Q *1/00, 1/50;* C12N *11/06*
U.S. Cl. 435—14 33 Claims

1. A diagnostic composition comprising a mixture of hexokinase and glucose-6-phosphate dehydrogenase bound in biologically-active form to a carboxylated poly(urea-urethane) polymer matrix having oxyalkylene backbone segments wherein at least 60 mole percent of the oxyalkylene units are oxyethylene said carboxylated polymer prepared by reacting an excess of a polyoxyalkylene urethane prepolymer with a monomeric amino acid, and wherein said enzymes are bonded to at least one exterior surface of said polymer matrix.

7. A method for analyzing human body fluids comprising contacting a first aqueous solution of said body fluids with a mixture of hexokinase and glucose-6-phosphate dehydrogenase bound in biologically-active form to a carboxylated polyurethane polymer matrix, allowing said immobilized enzymes to catalyze reaction between the components of the first aqueous solution to form a second aqueous solution and determining the amount of at least one component of said second aqueous solution, said polymer comprising the reaction product of an excess of a polyoxyalkylene urethane prepolymer and a monomeric amino acid.

27. A method for binding enzymes comprising reacting a monomeric amino acid with an excess of a polyoxyalkylene urethane prepolymer to form a carboxylated prepolymer, curing the carboxylated prepolymer and coupling an enzyme thereto by use of a carbodiimide.

4,226,936

PROCESS FOR PREPARING 9α-OH BN ALCOHOL

Merle G. Wovcha; Frederick J. Antosz, both of Kalamazoo; John M. Beaton, Portage; Alfred B. Garcia, Kalamazoo, and Leo A. Kominek, Portage, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 844,366, Oct. 21, 1977, Pat. No. 4,175,006. This application Apr. 23, 1979, Ser. No. 32,189
Int. Cl.[2] C12P *33/16*
U.S. Cl. 435—55 4 Claims

1. A process for preparing 9α-OH BN alcohol in its essentially pure form which comprises cultivating a mutant microorganism selected from the group consisting of Arthrobacter, Bacillus, Brevibacterium, Corynebacterium, Microbacterium, Nocardia, Protaminobacter, Serratia, and Streptomyces, said mutant being characterized by its ability to selectively degrade steroids having 17-alkyl side chains of from 8 to 10 carbon atoms, inclusive, and accumulate 9α-OH BN alcohol in the fermentation beer, in an aqueous nutrient culture medium under aerobic conditions in the presence of a steroid containing from 8 to 10 carbon atoms, inclusive, in the 17-alkyl side chain and isolating said compound in its essentially pure form from the culture medium.

4,226,937

METHOD USING GLUCOAMYLASE IMMOBILIZED ON POROUS ALUMINA

Mukhtar Abdullah, Downers Grove, and Frederick C. Armbruster, LaGrange, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Apr. 27, 1979, Ser. No. 33,913
Int. Cl.[2] C12P *19/20*
U.S. Cl. 435—96 7 Claims

1. A process for converting a starch hydrolyzate to a dextrose-containing syrup which comprises:

a. treating the starch hydrolyzate with ion-exchange resin until its ash content is less than 0.1% on a dry basis;
b. contacting the deionized starch hydrolyzate with an immobilized enzyme composite consisting essentially of glucoamylase sorbed on porous alumina;
c. separating the treated hydrolyzate from said enzyme composite; and
d. recovering the dextrose product from the treated hydrolyzate.

4,226,938

METHOD FOR IMMOBILIZING ENZYMES

Masaru Yoshida; Minoru Kumakura, and Isao Kaetsu, all of Takasaki, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Continuation of Ser. No. 706,329, Jul. 19, 1976, abandoned. This application Sep. 21, 1978, Ser. No. 944,444
Claims priority, application Japan, Jul. 23, 1975, 50-89207; Jul. 23, 1975, 50-89209
The portion of the term of this patent subsequent to Dec. 4, 1996, has been disclaimed.
Int. Cl.[3] C12N *11/14*
U.S. Cl. 435—176 9 Claims

1. A method for immobilizing enzymes or enzyme-containing cells comprising (a) adsorbing said enzymes or enzyme-containing cells on an adsorbent selected from the group consisting of inorganic natural earth adsorbents, synthetic inorganic adsorbents and active carbon in an aqueous medium, (b) admixing the aqueous dispersion of said adsorbent on which enzymes or enzyme-containing cells have been adsorbed with a polymerizable monomer selected from the groups consisting of compounds represented by the general formula

$$CH_2=CX-\underset{\underset{O}{\|}}{C}-O-(CH_2)_n-OH \text{ or}$$

$$CH_2=CX-\underset{\underset{O}{\|}}{C}-O-(R^1O)_m-R^2,$$

wherein R^1 is a group $-CH_2CH_2-$ or $-CH(CH_3)CH_2-$, R^2 is hydrogen or methyl or a group represented by

$$CH_2=CX-\underset{\underset{O}{\|}}{C}-,$$

X is hydrogen or methyl, n is an integer 2, 3 or 4 and m is an integer from 2 to 20 and (c) effecting polymerization at a temperature between −20° C. and −80° C., to form a porous gel lump in which enzymes or enzyme-containing cells are distributed adsorbed on inorganic adsorbent, and through which a substrate solution can freely pass.

4,226,939

TREATMENT OF MAKE-UP WATER FOR USE IN A FERMENTATION PROCESS FOR GROWTH OF YEAST CELLS REQUIRING GROWTH FACTORS

Eugene H. Wegner, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 6, 1978, Ser. No. 875,667
Int. Cl.[3] C12N *1/32*
U.S. Cl. 435—247 14 Claims

1. In a process for aqueous biological fermentation employing at least one yeast or bacterial culture wherein said microorganism requires at least one organic growth factor for effective growth under aqueous aerobic fermentation conditions employing at least one organic growth factor, make-up water containing residual chlorine and a suitable carbon substrate, assimilable nitrogen source, molecular oxygen, and nutrient minerals, effective for growth of said at least one yeast or bacterial culture, said residual chlorine being present in

amounts rendering said at least one growth factor less effective for growth of the microorganism, the step which comprises substantially removing said residual chlorine from said residual chlorine-containing make-up water to produce a residual chlorine content in said water of substantially zero prior to contact with said organic growth factors, said residual chlorine being removed by one treatment selected from the group consisting of using a reducing agent, aeration and a combination of heating and aeration, said treatment effective to render said residual chlorine content substantially zero.

4,226,940

NON-FROZEN CONCENTRATED BACTERIAL CULTURES

Arnold B. Storrs, Solon Mills, Ill., assignor to Great Lakes Biochemical Co., Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 871,231, Jan. 23, 1978, abandoned. This application Jun. 21, 1979, Ser. No. 50,886

Int. Cl.³ C12N *1/04*

U.S. Cl. 435—260 **17 Claims**

1. In a process for preparing a concentrated bacterial culture which can be cooled to a subfreezing temperature for preserving the viability of the bacteria for an extended time including the steps of inoculating an aqueous bacterial nutrient medium with a culture of the bacteria, incubating the inoculated medium under suitable conditions to obtain a desired yield of bacterial cells, and concentrating the medium to obtain a concentrated bacterial paste containing water, the improvement comprising

admixing with said paste a liquid anti-freeze agent containing at least one water freezing point depressant which is water-soluble, is non-injurious to the bacteria, and does not form crystals when cooled to a predetermined temperature within the range of about 5° to about −40° C., the amount of said water freezing depressant in said anti-freeze agent being sufficient to prevent formation of ice crystals from the water present in the resultant mixture when the resultant mixture is cooled to said predetermined temperature.

4,226,941

PROCESS FOR THE OPTICAL RESOLUTION OF D,L-2-AMINO-4-METHYLPHOSPHINOBUTYRIC ACID

Hitoshi Goi, Chiba; Shinji Miyado; Takashi Shomura, both of Yokohama; Akira Suzuki, Tokyo; Tomizo Niwa, and Yujiro Yamada, both of Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Sep. 27, 1979, Ser. No. 79,366

Int. Cl.³ C07B *19/02*

U.S. Cl. 435—280 **15 Claims**

1. A process for the optical resolution of D,L-2-amino-4-methylphosphinobutyric acid which comprises the steps of:

providing D,L-2-amino-4-methylphosphinobutyric acid in the form of its N-acyl derivative;

reacting the N-acyl derivative of D,L-2-amino-4-methylphosphinobutyric acid in an aqueous medium with a microbial acylase having an optically specific hydrolytic activity which is produced by cultivating a microbial strain belonging to the genus Pseudomonas, Streptomyces or Aspergillus; whereby

selectively eliminating the acyl group of N-acyl-L-2-amino-4-methylphosphinobutyric acid to give a mixture of L-2-amino-4-methylphosphinobutyric acid and N-acyl-D-2-amino-4-methylphosphinobutyric acid; and

isolating and recovering L-2-amino-4-methylphosphinobutyric acid from the mixture.

4,226,942

FOAMABLE RESINS PROCESS

Nan Wei, West Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 15, 1978, Ser. No. 934,134

Int. Cl.² C08J *9/18, 9/20, 9/22*

U.S. Cl. 521—56 **26 Claims**

1. In an improved process for the production of foamable polyvinyl aromatic resin beads, the steps comprising:

(a) polymerizing a vinyl aromatic monomer in a first aqueous suspension system forming polymeric beads of said monomer,

(b) separating the beads from the first aqueous suspension,

(c) suspending the separated beads under agitation in a second aqueous suspension system,

(d) incorporating a volatile liquid blowing agent into the beads at a temperature above the softening temperature of the beads under superatmospheric pressure in a closed vessel,

(e) cooling the second aqueous suspension under superatmospheric pressure until the suspended beads have cooled sufficiently to render the beads non-foaming at atmospheric pressures,

(f) recovering the beads from the aqueous suspension,

(g) drying the beads forming free flowing foamable polyvinyl aromatic polymeric beads having 1–15% of said volatile liquid blowing agent incorporated in the beads, the improvement comprising: drying said beads under vacuum conditions at normal temperatures of about 15° to 45° C., removing residual water from said beads while retaining said blowing agent in said beads and maintaining the structure of said beads as foamable non-foamed beads recovered from step (f), said vacuum being 380 to 735 mm of Hg.

4,226,943

FOAMABLE COMPOSITION OF VINYL CHLORIDE POLYMERS AND METHOD OF PRODUCING OPEN CELL SHEET

Normitsu Tsurushige; Toshinori Takao, and Shinichi Yamada, all of Naruto, Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Japan

Filed Nov. 21, 1978, Ser. No. 962,708

Int. Cl.² C08J *9/10*

U.S. Cl. 521—73 **13 Claims**

1. A foamable composition of vinyl chloride polymers for preparation of an open cell sheet, comprising:

(i) 100 parts by weight of a vinyl chloride

(ii) 30 to 150 parts by weight of a plasticizer;

(iii) 1 to 8 parts by weight of a synthetic hydrocarbon wax prepared by a process selected from the group consisting of depolymerization of polyethylene, polymerization of ethylene and the Fischer-Tropsch synthesis of coal gas, said wax having a molecular weight of 1,500 to 7,000, a softening point of 90° to 135° C. and an average particle size of 10 to 100 μm,

(iv) 1 to 5 parts by weight of an alkali metal-zinc stabilizer and

(v) 2 to 10 parts by weight of a decomposable organic blowing agent containing at least 60% by weight of azodicarbonamide.

4,226,944

PROCESS FOR A POLYURETHANE FOAM CONTAINING FRAGRANCE

Herman Stone, Hazleton, and Peter D. Pauly, Mountaintop, both of Pa., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Nov. 13, 1978, Ser. No. 960,390

Int. Cl.² C08G *18/14, 18/08;* **A61L** *9/01*

U.S. Cl. 521—76 **26 Claims**

1. A process for the manufacture of a polyurethane foam

containing a particulate filler and a fragrance which comprises the steps of mixing at least one particulate filler with at least one fragrance material to form a first mixture, mixing said first mixture with at least one liquid polyol to form a second mixture, and then mixing said second mixture with at least one organic polyisocyanate, water, and at least one catalyst whereby a polyurethane foam capable of releasing fragrance at a controlled and steady rate is produced.

4,226,945

RUBBER COMPOSITIONS EXPANSIBLE UNDER VULCANIZATION CONDITIONS

Hans J. Bücken, Monheim-Baumberg, and Helmut Horskorte, Monheim, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Continuation of Ser. No. 883,684, Mar. 6, 1978, abandoned. This application Aug. 7, 1979, Ser. No. 64,356

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1977, 2709622

Int. Cl.[2] C08J *9/08*

U.S. Cl. 521—92 6 Claims

1. A rubber composition, expansible under vulcanization conditions consisting of at least one vulcanizable synthetic rubber selected from the group consisting of styrene/butadiene rubber, polybutadiene rubber, and mixtures thereof, vulcanizing agents and a propellant gas donor under vulcanizing conditions in the absence of azobutyric acid dinitrile and sodium hydrogen carbonate, consisting of a mixture of

(a) from 100 to 900 parts by weight, based on 100 parts by weight of said synthetic rubber, of natural, non-pretreated chalk, and

(b) from 5 to 120 parts by weight, based on 100 parts by weight of said synthetic rubber, of at least one natural fatty acid having from 14 to 18 carbon atoms and containing at least 60% of saturated acids, as the sole blowing agent.

4,226,946

POLYETHYLENE BLEND FOAMS HAVING IMPROVED COMPRESSIVE STRENGTH

Chung P. Park, Pickerington, and Richard A. Bouton, Reynoldsburg, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 22, 1979, Ser. No. 14,184

Int. Cl.[2] C08J *9/14*

U.S. Cl. 521—98 14 Claims

1. In a method of making polymer resin foams by the process of extrusion foaming wherein a normally solid thermoplastic resin is heat-plastified and mixed with at least one blowing agent to form a flowable gel which is then passed through a die opening into a zone of lower pressure to cause expansion of the extruded material which is then cooled to form a cellular resinous body, the improvement wherein the thermoplastic resin comprises a polyethylene blend comprising about 35 to about 60 weight percent of low density branched polyethylene having a density from about 0.910 to about 0.930 in admixture with from about 40 to about 65 weight percent of intermediate density linear polyethylene having a density from about 0.931 to 0.940 thereby producing polyethylene blend foams having density of from about 3.0 to about 15.0 pounds per cubic foot, substantially closed-cell structure and compressive strength at 10% deformation of from about 7 to about 170 psi.

4,226,947

FLEXIBLE URETHANE FOAMS HAVING A LOW DENSITY AND A METHOD FOR PRODUCING SAID FOAMS

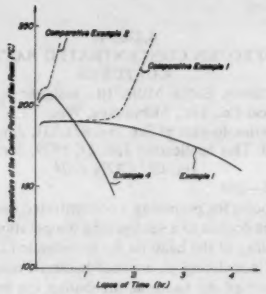
Toshio Yukuta; Hiroya Fukuda; Seiji Ishii, and Kazuo Utsumi, all of Yokohama, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Oct. 24, 1978, Ser. No. 954,378

Claims priority, application Japan, Nov. 11, 1977, 52-134686

Int. Cl.[3] C08G *18/14*

U.S. Cl. 521—107 10 Claims



1. In a method for producing flexible urethane foams having a low density and capable of preventing spontaneous combustion during production and storage of flexible urethane foams by combining polyhydroxyl compounds, polyisocyanates, water, catalysts, surfactants, foaming agents and other additives, the improvement which comprises using 5.0–12.0 parts by weight of water based on 100 parts by weight of the polyhydroxyl compounds, and not less than 0.1 part by weight of aromatic amine antioxidants.

4,226,948

2-TRICHLOROMETHYLOXAZOLIDINE AND THIAZOLIDINE DERIVATIVES USEFUL AS FLAME RETARDANTS FOR POLYURETHANE FOAM

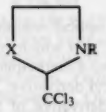
Ivan C. Popoff, Ambler, and Stanley R. Sandler, Springfield, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Jan. 8, 1979, Ser. No. 1,626

Int. Cl.[2] C08G *18/38, 18/32, 18/14*

U.S. Cl. 521—167 4 Claims

1. A rigid polyurethane foam prepared from a reaction mixture which comprises a flame retarding amount of a compound selected from the group consisting of:



where

(a) X is O or S and

(b) R is selected from the group consisting of H,

$-CH_2CH_2OH$, $-CH_2-\underset{OH}{CH}-\underset{OH}{CH_2}$ and $-CH_2-\underset{CH_3}{CH}-OH$

wherein the resulting foam not only has flame retardant properties but also has smoke suppressant properties.

4,226,949

WHOLLY AROMATIC POLYAMIDE FOAM

Wesley Memeger, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 881,731, Feb. 27, 1978, Pat. No. 4,178,419. This application Aug. 1, 1979, Ser. No. 62,907

Int. Cl.[2] C08J 9/02

U.S. Cl. 521—184 4 Claims

1. A wholly aromatic polyamide foam prepared by dealkylation of an N-alkyl wholly aromatic polyamide wherein either the diamine residue or the dicarboxylic acid residue is para oriented, said foam having a density of 0.025 to 0.7 g./cm.[3] wherein the cell walls are oriented as evidenced by a birefringence of at least 10% of the maximum possible birefringence and having substantially no residual N-alkyl groups.

4,226,950

PLASTICIZED, IMPACT MODIFIED POLYCARBONATES

Fred F. Holub, Schenectady, N.Y., and Phillip S. Wilson, Louisville, Ky., assignors to General Electric Company, Pittsfield, Mass.

Filed Jul. 6, 1978, Ser. No. 922,305

Int. Cl.[2] C08L 67/06

U.S. Cl. 525—67 9 Claims

1. A thermoplastic molding composition comprising:

(a) a bisphenol-A polycarbonate having an I.V. of about 0.2–1.0;

(b) about 0.1–10 weight percent based upon said polycarbonate of an oligomeric ester plasticizer: 2,2-dimethyl-1,3propane-diol and adipic acid; in admixture with

(c) an impact modifier of about 0.1–10 weight percent based upon said polycarbonate of at least one component selected from the group consisting of polyolefins, olefin based copolymers and olefin based terpolymers, or

(d) about 0.1–50 weight percent based upon said polycarbonate of at least one component selected from the group consisting of methyl methacrylate-butadiene-styrene copolymers, methyl methacrylate-acrylonitrile-butadiene-styrene copolymers and acrylonitrile-butadiene-styrene copolymers.

4,226,951

BLOCK POLYMERS OF POLYPHENYLENE OXIDE AND POLYSTYRENE

Dwain M. White, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

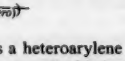
Filed Jun. 19, 1978, Ser. No. 916,763

Int. Cl.[2] C08L 63/02, 79/04

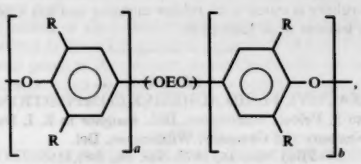
U.S. Cl. 525—92 14 Claims

1. A heterocyclic-coupled block copolymer comprising a carbon and nitrogen ring containing aromatic heterocyclic radical, a divalent quinone-coupled phenoxy radical and a divalent bis(oxyarylenethio)polystyrene radical.

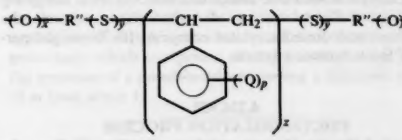
2. A heterocyclic-coupled block polymer comprising a heterocyclic carbon and nitrogen containing heterocyclic aromatic heterocyclic radical in which at least two of the aromatic heterocyclic ring carbon atoms are singly and directly bonded to oxygen atoms of a divalent quinone-coupled phenoxy radical and/or a divalent bis(oxyarylenethio)polystyrene radical, said divalent heterocyclic aromatic radical being of the formula



wherein Ar is a heteroarylene radical; said divalent quinone-coupled phenoxy radical being of the formula



wherein independently each –(OEO)– is a divalent quinone residue, E is a divalent arene radical, either a or b is at least equal to 1, the sum of a plus b is at least equal to 10, and R is hydrogen, a hydrocarbon radical, a halohydrocarbon radical, a hydrocarbonoxy radical or a halohydrocarbonoxy radical; said divalent bis(oxyarylenethio)polystyrene radical being of the formula



wherein independently each x is an integer at least equal to 1 and is a maximum equal to the number of replaceable hydrogen atoms associated with the R″ arene radical, y is an integer at least equal to 1, R″ is at least a divalent arene radical, Q is a hydrogen, halogen, alkyl or alkenyl radical, p is an integer of from 1 to 5, and Z is an integer at least equal to 2.

4,226,952

THERMOPLASTIC ELASTOMER BLENDS OF ALPHA-OLEFIN POLYMERS AND HYDROGENATED MEDIUM AND HIGH VINYL BUTADIENE POLYMERS

Adel F. Halasa, Bath; David W. Carlson, and James E. Hall, both of Akron, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 20, 1979, Ser. No. 68,281

Int. Cl.[3] C08F 8/04

U.S. Cl. 525—192 16 Claims

1. A thermoplastic elastomer composition comprising a blend of (a) a hydrogenated polybutadiene having, prior to hydrogenation, 40–100 percent 1,2-microstructure and said hydrogenation having been effected to remove at least 85 percent of the original unsaturation, and (b) a polymer of at least one alpha-olefin having 2–20 carbon atoms, said alpha-olefin polymer having a melting point of at least 90° C. and having at least 45 percent crystalline structure therein; the amount of said hydrgenated polybutadiene comprising 40–90 percent by weight and the amount of alpha-olefin polymer comprising 10–60 percent by weight, said percentage being based on the combined weight of components (a) and (b).

4,226,953

THERMOPLASTIC COMPOSITIONS OF STYRENE-ACRYLONITRILE RESIN AND NITRILE RUBBER

Aubert Y. Coran, and Raman P. Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 893,880, Apr. 6, 1978, abandoned. This application Feb. 22, 1979, Ser. No. 13,946

Int. Cl.[2] C08L 9/02, 25/12

U.S. Cl. 525—193 10 Claims

1. A thermoplastic composition comprising a blend of about 20 to about 65 parts by weight thermoplastic SAN resin comprising a polymer of styrene and acrylonitrile and about 75 to about 35 parts by weight nitrile rubber comprising a polymer

of 1,3-butadiene or isoprene and vinyl nitrile monomer per 100 total parts by weight SAN resin and nitrile rubber in which the nitrile rubber is cured with rubber curative and has a gel content in toluene of at least 85%.

4,226,954

REACTIVE FLUID ADHESIVE COMPOSITIONS

Lorenzo F. Pelosi, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 16, 1978, Ser. No. 961,419
Int. Cl.[2] C08F *255/02*
U.S. Cl. 525—259 **7 Claims**

1. A composition suitable for use as an adhesive when combined with an aldehyde-amine condensation product, said composition comprising chlorosulfonated polyethylene, peroxy free radical generator, methacrylic acid, and a monomer mixture consisting essentially of a major proportion of at least one compound selected from the group consisting of C_{10}–C_{18} acrylates and C_{10}–C_{18} methacrylates, and a minor proportion of at least one compound selected from the group consisting of diacrylates and dimethacrylates, wherein the diacrylates and dimethacrylates comprise 10–30 weight percent of the monomer mixture.

4,226,955

POLYMERIZATION PROCESS

William J. I. Bracke, Hamme, and Jacqueline Brandli, Brussels, both of Belgium, assignors to Labofina S.A., Brussels, Belgium

Continuation of Ser. No. 676,807, Apr. 14, 1976, abandoned. This application Jul. 18, 1978, Ser. No. 925,756
Int. Cl.[2] C08F *279/04*
U.S. Cl. 525—316 **9 Claims**

1. A process for preparing an ABS graft copolymer comprising the steps of:

(a) imbibing a stabilized latex rubbery polymer having a surface tension of between about 30 and 40 dynes/cm with a portion of the styrene to be grafted with the latex in an amount of about 1.5 and 15 parts by weight styrene per 100 parts of dry latex and with a portion of the acrylonitrile to be grafted with the latex in an amount of about 5 to 15 parts by weight acrylonitrile per 100 parts of dry latex for a period between about 1 and 20 hours;

(b) introducing said imbibed latex into a polymerization vessel;

(c) introducing into said polymerization vessel the balance of styrene, and the balance of acrylonitrile and a free radical initiator;

(d) introducing a polymerization activator into said polymerization vessel;

(e) polymerizing said styrene and acrylonitrile in said polymerization vessel in the presence of said latex, whereby an ABS graft copolymer is produced; and

(f) withdrawing said ABS polymer from said polymerization vessel.

4,226,956

GRAFT COPOLYMERS CONTAINING POLYOXAZOLINE AND POLYOXAZINE, AND THE PREPARATION THEREOF

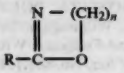
Donald N. Schulz, Hartville, and Prakash D. Trivedi, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 796,911, May 16, 1977, Pat. No. 4,143,100. This application Nov. 7, 1978, Ser. No. 958,586
Int. Cl.[3] C08G *73/00*
U.S. Cl. 525—330 **21 Claims**

1. A graft copolymer composition, comprising:

the reaction product of a backbone polymer having allylic chloride groups therein and monomers forming a pendant graft polymer,

said monomers having the formula



wherein R is an alkyl group having from 1 to 15 carbon atoms, a cycloalkyl group having from 4 to 15 carbon atoms, an aryl group having from 6 to 15 carbon atoms, combinations thereof, or hydrogen, and wherein n is 2 or 3,

the amount by weight of said pendant graft polymer ranging from about 0.5 percent to about 90 percent based upon the total weight of said graft copolymer,

said backbone polymer being polychloroprene, and

said graft polymer substituted for said chlorine atom of said allylic chloride group of said backbone polymer.

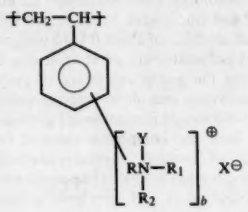
4,226,957

WET STRENGTH PAPER ADDITIVES

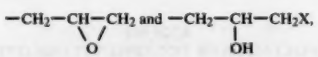
Donald N. Van Eenam, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 13, 1979, Ser. No. 48,218
Int. Cl.[2] C08F *8/32, 8/24*
U.S. Cl. 525—336 **5 Claims**

1. A polymeric wet strength additive wherein from 5 to 100% of the recurring units have the formula



Y is selected from



X is a radical derived from water-soluble proton acid, R is a C_1 to C_3 alkylene group, R_1 and R_2 are each substituted or unsubstituted C_1 to C_4 alkyl groups or, taken with the nitrogen together represent a saturated heterocyclic group, and b is an integer from 1 to 3.

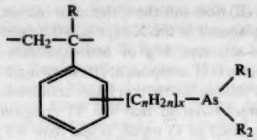
4,226,958

PROCESS FOR PREPARING ORGANO-ARSENIC DERIVATIVES OF POLYSTYRENE AND RELATED POLYMERS

Curtis P. Smith, Cheshire, and George H. Temme, North Haven, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

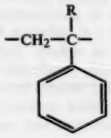
Filed Aug. 27, 1979, Ser. No. 69,764
Int. Cl.[2] C08F *8/22, 8/24, 8/42*
U.S. Cl. 525—356 **19 Claims**

1. A process for the preparation of a polymer having in its molecule at least one unit having the formula:



(I)

wherein R is selected from the group consisting of hydrogen and methyl, C_nH_{2n} represents lower-alkylene, R_1 and R_2 are independently selected from the group consisting of aryl and lower-alkyl and x is 0 or 1, and the remainder of the recurring units in said polymer have the formula:

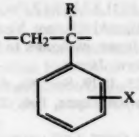


(II)

wherein R is as above defined;

which process comprises reacting a mixture of:

(a) the corresponding polymer having in its molecule at least one unit represented by the formula:



(III)

wherein R has the meaning above defined and X is selected from the group consisting of chlorine, bromine, iodine, lower-chloroalkyl, lower-bromoalkyl and lower-iodoalkyl, the remainder of the recurring units in said polymer having the formula (II) above;

(b) at least one molar proportion, per unit of formula (III) in said starting polymer, of an arsenic compound selected from the group consisting of arsenic trichloride, arsenic tribromide and arsenic trioxide; and

(c) at least 3 molar proportions, per unit of formula (III) in said starting polymer, of a hydrocarbyl halide selected from the group consisting of aryl chlorides, aryl bromides, aryl iodides, lower-alkyl chlorides, lower-alkyl bromides, lower-alkyl iodides and mixtures of said halides;

in the presence of:

(d) an at least stoichiometric proportion, based on the proportion of component (c), of a metal selected from the class consisting of sodium, lithium and magnesium.

4,226,959

PROCESS FOR THE PREPARATION OF POLYMERIC ACETAL CARBOXYLATES

David R. Dyroff, Creve Coeur, and Victor D. Papanu, Maryland Heights, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 22, 1979, Ser. No. 86,894

Int. Cl.³ C08F *283/06*; C08G *6/00*; C08L *61/02*

U.S. Cl. 525—401 **18 Claims**

1. A process which comprises:

(A) bringing together an ester of glyoxylic acid and a polymerization initiator under polymerization conditions;

(B) adding to the resulting polymer a sufficient amount of trichloroacetic acid or trifluoroacetic acid to provide a temporarily stabilized polymer;

(C) providing a miscible solvent and a sufficient amount of trichloroacetic acid or trifluoroacetic acid to act as an endcapping catalyst for the temporarily stabilized polymer; and

(D) adding an alkyl vinyl ether having up to about 20 carbon atoms in the alkyl group to provide a chemically stable end group at the polymer termini to stabilize the polymer against rapid depolymerization in alkaline solution.

4,226,960

PROCESS FOR THE PREPARATION OF POLYMERIC ACETAL CARBOXYLATES

David R. Dyroff, Creve Coeur, and Victor D. Papanu, Maryland Heights, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 22, 1979, Ser. No. 86,895

Int. Cl.³ C08F *283/06*; C08L *61/02*

U.S. Cl. 525—401 **13 Claims**

1. In a process wherein an ester of glyoxylic acid is polymerized, and an alkyl vinyl ether containing 1 to about 20 carbon atoms in the alkyl group is added to the resulting polymer in the presence of a haloacetic acid to stabilize the polymer against rapid depolymerization in alkaline solution; the improvement which comprises: adding the alkyl vinyl ether in the presence of a miscible solvent having a dielectric constant of at least about 15.

4,226,961

TRANSPARENT COMPOSITIONS OF BISPHENOL-A-POLYCARBONATE, POLYALKYLENE TEREPHTHALATE AND AN AROMATIC POLYESTER CARBONATE

Gary S. Motz, Wadesville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 869,529, Jan. 16, 1978, abandoned. This application Aug. 10, 1979, Ser. No. 65,517

Int. Cl.² C08L *67/02*

U.S. Cl. 525—439 **24 Claims**

1. A thermoplastic molding composition, which after molding is transparent, said composition comprising

(a) a polyalkylene terephthalate;

(b) a bisphenol-A polycarbonate; and

(c) an aromatic polyester carbonate,

wherein the total amount of component (a) exceeds about 10 to 12 percent by weight of the total composition.

4,226,962

PRODUCTION OF NOVEL METAL MODIFIED NOVOLAK RESINS AND THEIR USE IN PRESSURE SENSITIVE PAPERS

John J. Stolfo, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Division of Ser. No. 830,993, Sep. 6, 1977, Pat. No. 4,173,684. This application Dec. 11, 1978, Ser. No. 968,358

Int. Cl.³ C08G *8/28*

U.S. Cl. 525—506 **5 Claims**

1. A process for the preparation of a metal modified novolak resin, said metal modified novolak resin being an electron acceptor suitable for use in a pressure-sensitive copy system and being co-reactive with color precursors of the electron donor type, said metal modified novolak resin being further characterized by compatability with the surface properties of a paper substrate comprising:

(a) heating a mixture consisting essentially of one or more para-substituted phenols, salicylic acid, formaldehyde and an acid catalyst for a period of time sufficient to substantially completely react said phenols and said salicylic acid with said formaldehyde to form a melted novolak resin, said mixture having a pH below 4 and being substantially free of any alkaline earth metal salt;

(b) mixing said melted novolak resin with a metal salt in an inert atmosphere to form said metal modified novolak

resin, said metal salt being selected from the metal alkanoate salts of an alkanoic acid having 1 to 3 carbon atoms, metal hydroxybenzoates, metal dibenzoates and metal acetylacetonates, said metal being selected from the group consisting of copper, zinc, cadmium, aluminum, indium, tin, chromium, cobalt and nickel.

5. A process for the production of a novolak resin, said novolak resin being useful in the preparation of a metal modified novolak resin, said metal modified novolak resin being an electron acceptor suitable for use in a pressure-sensitive copy system and being co-reactive with color precursors of the electron donor type, said novolak resin being further characterized by compatability with the surface properties of a paper substrate, said process comprising heating a mixture consisting essentially of:

(a) a para-substituted phenol, said para-substituted phenol being selected from the group consisting of para-alkyl phenols having an alkyl group of 1 to 12 carbon atoms, para-phenylphenol and mixtures thereof:
(b) salicylic acid;
(c) formaldehyde; and
(d) an acid catalyst; said mixture having a pH below 4 and being substantially free of any alkaline earth metal salt.

4,226,963
PROCESS FOR THE STEREOREGULAR POLYMERIZATION OF ALPHA-OLEPHINS

Umberto Giannini; Antonio Cassata; Paolo Longi, all of Milan, and Romano Mazzocchi, Pernate, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 845,945, Oct. 27, 1977, abandoned, Continuation-in-part of Ser. No. 853,749, Nov. 21, 1977, abandoned, said Ser. No. 845,945, is a continuation of Ser. No. 599,412, Jul. 28, 1975, abandoned, which is a division of Ser. No. 503,963, Sep. 16, 1974, abandoned, which is a continuation of Ser. No. 265,438, Jun. 23, 1972, abandoned, said Ser. No. 853,749, is a continuation of Ser. No. 593,991, Jul. 8, 1975, abandoned, which is a division of Ser. No. 503,765, Sep. 6, 1974, abandoned, which is a continuation of Ser. No. 265,503, Jun. 23, 1972, abandoned. This application Nov. 13, 1978, Ser. No. 959,604

Claims priority, application Italy, Jun. 25, 1971, 26275 A/71

The portion of the term of this patent subsequent to May 22, 1996, has been disclaimed.

Int. Cl.[2] C08F *4/02, 10/06*

U.S. Cl. 526—114 **34 Claims**

1. Process for the stereoregular polymerization of alpha-olefins of the formula $CH_2{=}CHR$ wherein R is an alkyl radical having 1–6 carbon atoms and mixtures thereof with ethylene, which process comprises polymerizing the olefins in contact with a catalyst the starting catalyst-forming components of which comprise the following components (A) and (B):

(A) the addition and/or substitution reaction product of an electron-donor compound (or Lewis base) free from ester groups of oxygenated organic and inorganic acids with an Al-trialkyl compound or the addition reaction product of said electron-donor compound with an Al-alkyl compound containing two or more Al atoms linked together through an oxygen or a nitrogen atom, component (A) being characterized in that the amount of Al-alkyl compound present as addition compound with the electron-donor compound ranges from 0.01 to 1 mole per mole of the starting Al compound and in that the Al-compound present as substitution compound ranges from 0.01 to 0.9 moles per mole of the starting Al-compound; and

(B) the product obtained by contacting a Ti compound selected from the group consisting of the halogenated bi-, tri-, and tetravalent Ti compounds and complexes of said Ti compounds with an electron-donor compound, with a support comprising an anhydrous Mg or Mn dihalide and from 30% to 90% of a co-support selected from the group consisting of LiCl, $CaCO_3$, $CaCl_2$, $SrCl_2$, $BaCl_2$, Na_2SO_4, Na_2CO_3, $Na_2B_4O_7$, $Ca(PO_4)_2$, $CaSO_4$, $BaCO_3$, $Al(SO_4)_3$, B_2O_3, Al_2O_3 and SiO_2, the Mg or Mn dihalide being in an active state such that the X-rays powder spectrum of component (B) does not show the most intense diffraction lines as they appear in the X-rays powder spectrum of the normal non-activated Mg or Mn dihalides, the X-rays powder spectrum of component (B) showing a broadening of said most intense diffraction lines, component (B) being further characterized in that the Ti compound present therein, expressed as Ti metal, is less than 0.3 g atom per mole of the total amount of the electron-donor compound present in a combined form in the catalyst and the catalyst being additionally characterized in that the Al/Ti molar ratio is from 10 to 1,000.

4,226,964
PROCESS FOR POLYMERIZING OLEFIN

Toru Tanaka, Komae; Shigeaki Okano, Yamato, and Eiji Tanaka, Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Jan. 25, 1979, Ser. No. 6,386

Claims priority, application Japan, Feb. 23, 1978, 53-20148; Oct. 17, 1978, 53-127507

Int. Cl.[2] C08F *4/02, 10/02*

U.S. Cl. 526—114 **17 Claims**

1. In a process for polymerizing an olefin in the presence of a catalyst system combining an organoaluminum compound with a hydrocarbon insoluble solid catalytic component prepared by treating a hydrocarbon solution containing a magnesium compound, a titanium compound and a zirconium compound with an aluminum halide having the formula $AlR^1X_2^1$, wherein R^1 represents an alkyl, aryl or cycloalkyl group and X^1 represents a halogen atom, the improvement wherein the magnesium compound is a compound having the formula

$$Mg(OR^2)_2$$

wherein R^2 represents an alkyl, aryl or cycloalkyl group; and the titanium compound is a compound having the formula

$$Ti(OR^3)_3X^3$$

wherein R^3 represents an alkyl, aryl or cycloalkyl group; and the zirconium compound is a compound having the formula

$$Zr(OR^4)_mX_{4-m}^4$$

wherein R^4 represents an alkyl, aryl or cycloalkyl group; X^4 represents a halogen atom; m is 1, 2 or 3 or an alcohol solution of a compound having the formula

$$ZrX_4^4$$

$X^3{=}X^4{=}Cl$; and wherein

$$\gamma = \frac{X^{11} + X^3 + X^4}{OR^2 + OR^3 + OR^4 + X^3 + X^4} > 3 \text{ and}$$

$$2.3 \leqq \frac{Zr}{Ti} \times \gamma \leqq 2.9$$

4,226,965

METHOD FOR PREPARING POLYMERS AND COPOLYMERS OF HIGHER α-OLEFINES

Vasily A. Grigoriev, ulitsa O. Koshevogo, 10, kv. 71; Zinaida V. Arkhipova, Porokhovskaya ulitsa, 54/1, kv. 210; Gurgen A. Balaev, prospekt Morisa Toreza, 94, korpus 3, kv. 5; Nikolai G. Bakajutov, kanal Griboedova, 29, kv. 24; Vera I. Vysotskaya, Grazhdansky prospekt, 77, korpus 2, kv. 8; Arkady V. Polyakov, prospekt Morisa Toreza, 9, kv. 193, and Vitaly M. Zapletnyak, Moskovskoe shosse, 4, kv. 185, all of Leningrad, U.S.S.R.

Filed Sep. 28, 1978, Ser. No. 947,334
Int. Cl.[2] C08F *4/66, 10/14*
U.S. Cl. 526—116 2 Claims

1. A method for preparing crystalline polymers and copolymers of higher α-olefins having from 4 to 8 carbon atoms which comprises polymerizing or copolymerizing in a hydrocarbon medium said α-olefins in a reactor in the presence of a homogeneous catalyst soluble in the hydrocarbon medium containing an alkyl-aluminum chloride, trialkyl vanadate and an alkoxy derivative of a metal selected from the group comprising titanium, zirconium, hafnium, and then separating the hydrocarbon medium and remaining catalyst from the resultant polymer or copolymer.

4,226,966

METHOD FOR PRODUCING VINYL CHLORIDE RESINS

Makoto Shiraishi; Hiroshi Uchida, both of Kurashiki; Yoshinori Koizumi, Toyama, and Akira Saito, Ibaragi, all of Japan, assignors to Kurara Co., Ltd., Kurashiki, Japan

Continuation of Ser. No. 667,654, Mar. 17, 1976, abandoned.
This application Feb. 23, 1978, Ser. No. 880,557
Claims priority, application Japan, Mar. 24, 1975, 50/35233
Int. Cl.[2] C08F *2/20, 2/02, 118/08, 114/06*
U.S. Cl. 526—202 4 Claims

1. A method for producing a polyvinyl chloride resin comprising suspension polymerizing vinyl chloride monomer in the presence of an effective amount of a suspension stabilizer of a partially saponified polyvinyl alcohol having simultaneously: (a) a degree of saponification in the range of from 60 to 90 mol percent; (b) a solubility-in-methanol index at 55° C. in the range of from 10 to 60 percent; and, (c) a solubility in aqueous solution whereby said suspension stabilizer will not flocculate from a stirred 0.1 percent aqueous solution at a temperature in the range of from 30° C. to 65° C.

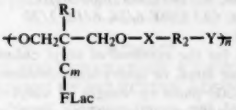
4,226,967

HIGHLY CHARGE-TRANSFERABLE POLYCONDENSATION POLYMER AND PROCESS FOR PREPARATION

Shigeo Tazuke, Yokohama, and Hajime Nagahara, Fuji, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 30, 1979, Ser. No. 34,700
Claims priority, application Japan, Apr. 28, 1978, 53-49749
Int. Cl.[2] C08G *18/32, 18/62*
U.S. Cl. 528—74 10 Claims

1. An electron acceptor polycondensation polymer of the formula (I):



(I)

wherein R_1 is a hydrogen atom or an alkyl group, an aryl group or an aralkyl group, having not more than 15 carbon atoms; C_m is a divalent connecting group; FLac is an electron acceptor group having a fluorene nucleus; X and Y are a carbonyl group or an acid amide capable of forming a urethane linkage with the oxygen atom of a diol; R_2 is a divalent organic residue having not more than 20 carbon atoms; n is a number greater than 10 which represents the degree of polycondensation of the resultant polycondensation polymer.

4,226,968

METHOD OF PRODUCING FURAN-EPOXY POWDER-LIKE BINDER

Gennady D. Varlamov, ulitsa Jubileinaya, 5, kv. 13; Ildgam A. Bekbulatov, ulitsa Kashkarskaya, 215; Shavkat Madaliev, ulitsa Yarmazar, 361; Juldash Mamatov, ulitsa Pushkina, 50, kv. 60; Alexandra V. Proshkina, ulitsa 25-letia Oktyabrya, 56, kv. 6, and Svetlana N. Ubiennykh, ulitsa 50-letia VLKSM, 14, kv. 14, all of Fergana, U.S.S.R.

Filed Jun. 6, 1978, Ser. No. 913,085
Int. Cl.[2] C08G *59/40*
U.S. Cl. 528—91 37 Claims

1. A method of producing a furan-epoxy powder-like binder comprising:

(1) reacting

(a) the polycondensation product of epichlorohydrin with bis(hydroxyphenyl)propane, with

(b) a ketone of the furan series selected from the group consisting of monofurfurylideneacetone; difurfurylideneacetone; difurfurylidene cyclohexanone; a mixture of monofurfurylideneacetone and difurfurylideneacetone at a weight ratio of from 1:1 to 1.4:1; 1,9-di-(α-furyl)-nonanetetraene-1,3,6,8-one-5 and 1,5-di-(α-furyl)-2,4-dimethylpentadiene-1,4-one-3; and

(c) a nitrogen-containing compound selected from the group consisting of triethanolamine, 3-methyl-5-furylpyrazoline; trifurylimidazoline, hexamethylenediamine; low molecular weight polyamides having a molecular weight of 2,000–10,000, and polyethylenepolyamine having a molecular weight of 1,000 at a temperature of 130° to 200° C. and the weight ratios of components (a):(b):(c) being 100:33-200:8-100;

(2) cooling the product of (1) to a temperature of not exceeding 30° C.; and

(3) grinding the product of (2) to a powder state.

4,226,969

EPOXY COMPOSITION FOR THREADLOCKING

Charles R. Watson, Jr., Farmington, and Mary A. Eichner, Windsor, both of Conn., assignors to Allied Products Corporation, Avon, Conn.

Filed Feb. 8, 1979, Ser. No. 10,214
Int. Cl.[2] C08G *59/50, 59/64*
U.S. Cl. 528—93 7 Claims

1. An epoxy resin threadlocking composition consisting essentially of:

A. 30–70 percent by weight of an epoxy resin;

B. 30–70 percent by weight of an amine hardener component therefor;

C. up to 25 percent by weight of a polyfunctional amine accelerator therefor;

D. up to 10 percent by weight of an inert filler; and

E. 1–25 percent by weight of an aminoalcohol compound soluble in the resin/hardener system and wherein the amine and hydroxyl groups are dispersed on a carbon chain and on different carbon atoms of that chain.

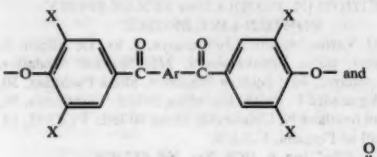
4,226,970

POLYESTERS DERIVED FROM DIKETODIOLS AND AROMATIC DICARBOXYLIC ACIDS AND FILAMENTS THEREOF

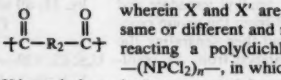
August H. Frazer, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 23, 1979, Ser. No. 59,891
Int. Cl.[2] C08G 63/18
U.S. Cl. 528—128 7 Claims

1. A fiber-forming (co)polyester consisting essentially of units having the structural formulas



and



in substantially equimolar amounts and wherein X is methyl- or chloro- and Ar is m- or p-phenylene with the proviso that when Ar is p-phenylene R_2 is selected from the group consisting of

(a) p-phenylene (15–40 mol %) and m-phenylene (60–85 mol %);
(b) p-phenylene (0–35 mol %) and ethylenedioxybis-p-phenylene (65–100 mol %);
(c) m-phenylene (0–50 mol %) and ethylenedioxybis-p-phenylene (50–100 mol %); and
(d) m-phenylene (0–30 mol %) and p,p'-biphenylene (70–100 mol %) and when Ar is m-phenylene, R_2 is selected from the group consisting of
(e) p-phenylene (0–35 mol %) and p,p'-biphenylene (65–100 mol %);
(f) p-phenylene (0–60 mol %) and ethylenedioxybis-p-phenylene (40–60 mol %);
(g) m-phenylene (0–40 mol %) and ethylenedioxybis-p-phenylene (60–100 mol %), and
(h) m-phenylene (15–50 mol %) and p,p'-biphenylene (50–85 mol %).

4,226,971

PHENOL-ALDEHYDE CONDENSATION PRODUCT WITH AMINOALKYLENE DERIVATIVE OF A POLYOXYALKYLENEPOLYAMINE

Harold G. Waddill, Austin, and Howard P. Klein, Houston, both of Tex., assignors to Texaco Development Corp., White Plains, N.Y.

Division of Ser. No. 927,260, Jul. 24, 1978, Pat. No. 4,164,520, Continuation-in-part of Ser. No. 865,053, Dec. 27, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,125
Int. Cl.[2] C08G 14/06
U.S. Cl. 528—162 5 Claims

1. The condensation product of phenol, formaldehyde and an aminoalkylene derivative of a polyoxyalkylenepolyamine made by reacting a polyoxyalkylenepolyamine with acrylonitrile followed by hydrogenation.

4,226,972

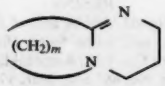
PROCESS FOR PREPARING POLY(ORGANOPHOSPHAZENES) FROM SOLUBLE OR GELLED POLY(DICHLOROPHOSPHAZENES)

Donald N. Schulz, Hartville; Jung W. Kang, Clinton, both of Ohio, and John W. Spiewak, Webster, N.Y., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 3, 1978, Ser. No. 957,398
Int. Cl.[3] C08G 79/02, 73/00
U.S. Cl. 528—168 12 Claims

1. A method of preparing poly(organophosphazenes) containing repeating units of the structure:

wherein X and X' are organic substituents which may be the same or different and n is from 20 to 50,000; which comprises reacting a poly(dichlorophosphazene) having the formula $-(NPCl_2)_n-$, in which n is from 20 to 50,000, with an active hydrogen-containing compound or mixture of active hydrogen-containing compounds in the presence of a bicyclic amidine represented by the structure:



in which m is an integer of from 1 to 10.

4,226,973

PROCESS FOR UPGRADING PREPOLYMER PARTICLES

Russell V. Malo, Munster, Ind.; Gary A. Gustafson, Naperville, and Ronald E. Bockrath, Aurora, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 22, 1979, Ser. No. 51,043
Int. Cl.[2] C08G 63/26
U.S. Cl. 528—481 9 Claims

1. A process for upgrading polyester prepolymer particles comprising continuously conveying polyester prepolymer particles through a thermovane processor under an inert gas sweep at a temperature below the softening point of the polyester and sufficient to achieve crystallization and/or solid-state polymerization without sticking of the particles.

4,226,974

PROCESS FOR THE REMOVAL OF VINYL CHLORIDE FROM POLYVINYL CHLORIDE LATEXES AND SLURRIES

Donald Goodman, Flemington; Marvin Koral, Warren; Robert S. Miller, Bridgewater, and Robert J. Stanaback, Gladstone, all of N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Division of Ser. No. 604,281, Aug. 13, 1975. This application Jan. 21, 1977, Ser. No. 761,109
Int. Cl.[3] C08F 6/24, 6/16, 2/20
U.S. Cl. 528—483 1 Claim

1. The process for the removal of vinyl chloride from an aqueous dispersion, latex, or slurry that contains from about 1000 parts to 20,000 parts by weight of vinyl chloride per million parts by weight of said dispersion, latex, or slurry and from 5% to 50% by weight of a vinyl chloride polymer selected from the group consisting of polyvinyl chloride and copolymers of vinyl chloride and at least one monomer copolymerizable therewith that comprises maintaining the dispersion, latex, or slurry at subatmospheric pressure while sparging

it with ammonia until the dispersion, latex, or slurry contains less than about 10 parts by weight of vinyl chloride per million part by weight of said vinyl chloride polymer.

4,226,975

PROCESS FOR THE REMOVAL OF VINYL CHLORIDE FROM POLYVINYL CHLORIDE DISPERSIONS AND LATEXES

Donald Goodman, Flemington; Marvin Koral, Warren; Robert S. Miller, Bridgewater, and Robert J. Stanaback, Gladstone, all of N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 604,281, Aug. 13, 1975. This application Nov. 8, 1976, Ser. No. 739,919

Int. Cl.³ C08F *6/24, 6/16, 2/20*

U.S. Cl. 528—483 **1 Claim**

1. The process for the removal of vinyl chloride from an aqueous dispersion or latex that contains from about 1000 parts to 20,000 parts by weight of vinyl chloride per million parts by weight of said dispersion or latex and from 5% to 50% by weight of a vinyl chloride polymer selected from the group consisting of polyvinyl chloride and copolymers of vinyl chloride and at least one monomer copolymerizable therewith that comprises the steps of

(a) adding to the dispersion or latex from 2% to 8% by weight of a polar, water-soluble organic compound selected from the group consisting of acetonitrile, chloroacetonitrile, formamide, dimethylformamide, diisopropylamine, 1-chlorobutene-2, and butyl bromide, and

(b) maintaining the resulting dispersion or latex at subatmospheric pressure while sparging it with ammonia until the dispersion or latex contains less than about 10 parts by weight of vinyl chloride per million parts by weight of said vinyl chloride polymer.

4,226,976

PROCESS FOR THE REMOVAL OF VINYL CHLORIDE FROM POLYVINYL CHLORIDE LATEXES AND SLURRIES WITH HYDROCARBON COMPOUNDS

Donald Goodman, Flemington; Marvin Koral, Warren; Robert S. Miller, Bridgewater, and Robert J. Stanaback, Gladstone, all of N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 604,281, Aug. 13, 1975. This application Sep. 20, 1976, Ser. No. 724,806

Int. Cl.² C08F *6/24, 6/14*

U.S. Cl. 528—498 **10 Claims**

1. The process for the removal of vinyl chloride from an aqueous dispersion, latex, or slurry that contains from about 1000 parts to 20,000 parts by weight of vinyl chloride per million parts by weight of said dispersion, latex, or slurry and from 5% to 50% by weight of a vinyl chloride polymer selected from the group consisting of polyvinyl chloride and copolymers of vinyl chloride and at least one monomer copolymerizable therewith that comprises maintaining the dispersion, latex, or slurry at a pressure between about 100 mm. and 600 mm. mercury absolute while sparging it with a gaseous organic compound selected from the group consisting of aliphatic hydrocarbons having 1 to 4 carbon atoms, halogenated aliphatic hydrocarbons having 1 or 2 carbon atoms and 1 to 4 halogen atoms, and mixtures thereof until the dispersion, latex, or slurry contains less than about 10 parts by weight of vinyl chloride per part by weight of said vinyl chloride polymer.

4,226,977

PROCESS FOR SEPARATING A KETOSE FROM AN ALDOSE BY SELECTIVE ADSORPTION

Richard W. Neuzil, Downers Grove, and James W. Priegnitz, Elgin, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed May 27, 1976, Ser. No. 690,768

Int. Cl.² C07G *3/00*

U.S. Cl. 536—1 **6 Claims**

1. A process for separating a ketose from a mixture comprising a ketose and an aldose which process comprises contacting at adsorption conditions said mixture with an adsorbent comprising a X zeolite containing at exchangeable cationic sites a cation pair selected from the group consisting of both barium and potassium and both barium and strontium and selectively adsorbing said ketose and thereafter recovering said ketose.

4,226,978

β-GALACTOSYL-UMBELLIFERONE-LABELED AMINOGLYCOSIDE ANTIBIOTICS AND INTERMEDIATES IN THEIR PREPARATION

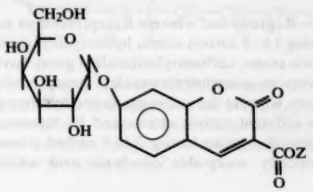
Robert C. Boguslaski; Robert J. Carrico, and John F. Burd, all of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Mar. 13, 1978, Ser. No. 886,094

Int. Cl.² C07H *15/22, 17/04*

U.S. Cl. 536—4 **11 Claims**

8. A compound of the formula:



wherein Z is hydrogen, potassium or sodium.

4,226,979

FORTIMICIN AK

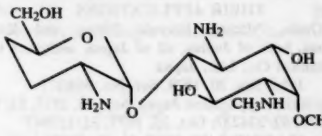
James B. McAlpine, Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 29, 1979, Ser. No. 25,241

Int. Cl.² A61K *31/71;* **C07H** *15/22*

U.S. Cl. 536—17 R **1 Claim**

1. Fortimicin AK represented by the formula



or a pharmaceutically acceptable salt thereof.

4,226,980

NOVEL DERIVATIVES OF FORTIMICIN B AND PROCESS FOR PREPARING SAME

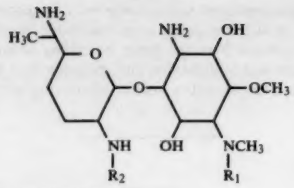
Moriyuki Sato, Machida; Kenichi Mochida, Hiratsuka; Shigeo Yoshile, Machida, and Yasuki Mori, Kawasaki, all of Japan, assignors to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 7, 1978, Ser. No. 967,352

Int. Cl.³ A61K *31/71;* **C07H** *15/22*

U.S. Cl. 536—17 R **5 Claims**

1. 4,2'-di-N-substituted derivatives of fortimicin B, represented by the formula:



wherein R_1 represents a

or $-CH_2-R_3$ group, and R_2 represents a

or $—CH_2—R_4$ group and wherein R_4 represents an aminoalkyl group having 1 to 8 carbon atoms, hydroxyalkyl group having 1 to 8 carbon atoms, carbamoylaminoalkyl group having 2 to 9 carbon atoms or ω-aminohydroxyalkyl group having 2 to 9 carbon atoms wherein the amino group and hydroxy group are bonded to different carbon atoms, and R_3 represents a carbamoylaminoalkyl group having 2 to 9 carbon atoms, and the pharmaceutically acceptable non-toxic acid addition salts thereof.

4,226,981

ETHER-ESTER DERIVATIVES OF CELLULOSE AND THEIR APPLICATIONS

Yoshiro Onda, Niigata; Hiroaki Muto, and Kazumasa Maruyama, both of Joetsu, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Japan

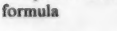
Filed Sep. 20, 1978, Ser. No. 944,177

Claims priority, application Japan, Sep. 28, 1977, 52/116328; Oct. 17, 1977, 52/124237; Oct. 25, 1977, 52/127947

Int. Cl.[2] B44D *1/50;* **C08B** *13/00;* **G03C** *1/92*

U.S. Cl. 536—66 **18 Claims**

1. A method of preparing a mixed ester selected from the class consisting of alkylcellulose, hydroxyalkylcellulose and hydroxyalkylalkylcellulose esterified with acidic succinyl groups expressed by the formula HO—CO—CH_2CH_2CO— and acyl groups represented by the general formula R—CO— where R is an aliphatic monovalent hydrocarbon group, which comprises esterifying a cellulose ether represented by the formula



where R^1 is a hydroxyalkyl group, R^2 is an alkyl group, A is a glucosic residue and m and n are each zero or a positive number not equal to zero simultaneously, with succinic anhydride and an anhydride of an aliphatic monocarboxylic acid.

4,226,982

PROCESS TO BREAK DOWN CELLULOSE POLYMERS AND PRODUCE CELLULAR SOLID OR SOLID REACTION PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 884,135, Mar. 7, 1978, Pat. No. 4,159,369, which is a continuation-in-part of Ser. No. 663,924, Mar. 4, 1976, Pat. No. 4,097,424, which is a continuation-in-part of Ser. No. 599,000, Jul. 7, 1975, Pat. No. 4,072,637, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,628, Sep. 11, 1970, abandoned. This application Feb. 21, 1979, Ser. No. 13,139

Int. Cl.[3] C08B *1/08;* **C08J** *9/02;* **C08G** *18/02*

U.S. Cl. 536—101 **35 Claims**

1. The process for the production of water-soluble broken-down alkali metal cellulose polymer by the following steps:

(a) mixing 2 parts by weight of a cellulose-containing plant with 1 to 3 parts by weight of an alkali metal hydroxide;

(b) heating the mixture at 150° C. to 220° C. while agitating for 5 to 60 minutes, thereby

(c) producing a water-soluble broken-down alkali metal cellulose polymer.

4,226,983

PREPARATION OF METAL COMPLEXES

Edward S. Lane, Didcot, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Sep. 26, 1978, Ser. No. 945,841

Claims priority, application United Kingdom, Sep. 29, 1977, 40587/77

Int. Cl.[3] C08B *37/02*

U.S. Cl. 536—113 **10 Claims**

1. A process for the preparation of a solution of a complex of iron, said complex including the iron and an organic complexing agent, comprising treating with an acid or alkali a water-insoluble, gel precipitate containing the iron and an organic complexing agent selected from the group consisting of dextran, polyvinyl alcohol, dextrin, starch, dextrose and sorbitol to redisperse the gel precipitate and form said solution.

4,226,984

2-DECARBOXY-2-AMINOMETHYL-TRANS-4,5-DIDEHYDRO-PGI$_1$ COMPOUNDS

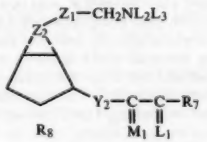
Donald E. Ayer, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 821,542, Aug. 3, 1977. This application Aug. 31, 1978, Ser. No. 938,547

Int. Cl.[2] C07D *307/93*

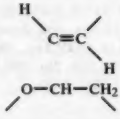
U.S. Cl. 542—426 **82 Claims**

1. A prostacyclin analog of the formula



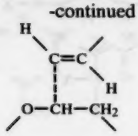
wherein Y_2 is trans—CH=CH—, cis—CH=CH—, or $—CH_2CH_2—$;

wherein Z_2 is



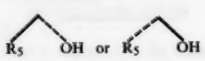
(I)

-continued



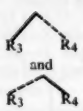
(2)

wherein Z_1 is
(1) $-(CH_2)_g-CH_2-CH_2-$, or
(2) $-(CH_2)_g-CH_2-CF_2-$,
wherein g is the integer zero, one, or 2;
wherein R_8 is hydrogen, hydroxy, or hydroxymethyl;
wherein M_1 is

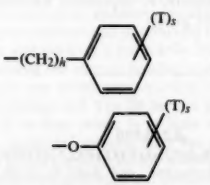


wherein R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive; and
wherein L_1 is

or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein L_2 and L_3 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; and
wherein R_7 is
(1) $-(CH_2)_m-CH_3$,



(2)

, or

(3)

wherein m is the integer one to 5, inclusive, h is the integer zero to 3, inclusive; s is the integer zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two T's are other than alkyl.

4,226,985

11-SUBSTITUTED PROSTAGLANDINS

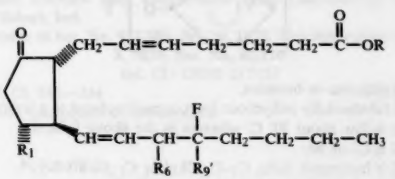
George W. Holland, Cedar Grove; Jane L. Jernow, Verona, and Perry Rosen, North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 780,878, Mar. 24, 1977, abandoned, which is a division of Ser. No. 614,044, Sep. 17, 1975, Pat. No. 4,036,871, which is a division of Ser. No. 480,458, Jun. 18, 1974, Pat. No. 4,052,446, which is a continuation-in-part of Ser. No. 386,117, Aug. 6, 1973, abandoned. This application Apr. 2, 1979, Ser. No. 26,125

Int. Cl.³ C07C *177/00*

U.S. Cl. 542—426 **4 Claims**

1. A compound of the formula:



wherein R is hydrogen or lower alkyl; R_1 is carboxy or lower alkoxycarbonyl; R_9' is hydrogen or lower alkyl; R_6 is hydroxy, tetrahydropyranyloxy, lower alkanoyloxy, benzyloxy, benzoyloxy, benzhydryloxy, trityloxy, or triloweralkylsilyloxy, or enantiomers or racemates thereof.

4,226,986

PROCESS FOR HALOGENATION OF β-LACTAM COMPOUNDS

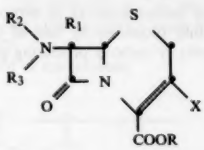
Lowell D. Hatfield, Bargersville; Larry C. Blaszczak, and Jack W. Fisher, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 1, 1979, Ser. No. 8,647

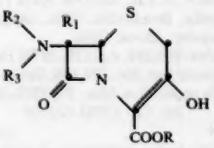
Int. Cl.² C07D *501/04*

U.S. Cl. 544—16 **38 Claims**

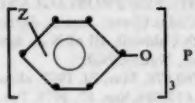
1. A process for preparing a compound of the formula



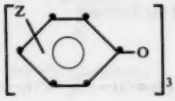
which comprises reacting a compound of the formula



with about 1.0 to about 1.3 equivalents of a halogenating compound of the formula

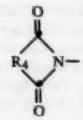


which is the kinetically controlled product of the reaction, in a substantially anhydrous inert organic solvent, of equivalent amounts of a triaryl phosphite of the formula



and chlorine or bromine,
in a substantially anhydrous inert organic solvent at a temperature below about 30° C. wherein in the above formulas
X is Cl or Br;
Z is hydrogen, halo, C_1–C_4 alkyl or C_1–C_4 alkoxy;
R is carboxylic acid protecting group;
R_1 is hydrogen or methoxy; and

is amino protected by a conventional amino protecting group; or
R_2 is hydrogen or an acyl group derived from a carboxylic acid; and
R_3 is an acyl group derived from a carboxylic acid; or
R_2 and R_3 taken together with the nitrogen atom to which they are attached form a group of the formula



wherein R_4 is the residue of an acyl group derived from a dicarboxylic acid; provided that when R_2 and R_3 are substituted by amino, hydroxy or carboxy groups, those groups are first protected by one of the conventional amino, hydroxy or carboxy protecting groups.

4,226,987

HETEROCYCLIC AMINE MOLYBDATE

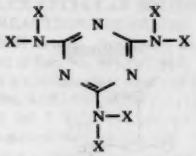
William J. Kroenke, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 792,293, Apr. 29, 1977, Pat. No. 4,153,792, which is a division of Ser. No. 770,168, Feb. 14, 1977, Pat. No. 4,053,455. This application Mar. 22, 1979, Ser. No. 22,670

Int. Cl.³ C07D *413/04*

U.S. Cl. 544—64 **2 Claims**

1. A heterocyclic amine molybdate wherein the heterocyclic amine used in producing the molybdate is a substituted melamine having the formula



wherein in at least one

the X's are joined together to form a morpholino group and the remaining X's are hydrogen or an alkyl, alicyclic, aralkyl, alkaryl or aryl group containing from 1 to 10 carbon atoms.

4,226,988

N-SUBSTITUTED PARAMENTHANE CARBOXAMIDES

Hugh R. Watson, Wargrave; David G. Rowsell, Staines, and David J. Spring, Datchet, all of England, assignors to Wilkinson Sword Limited, London, England

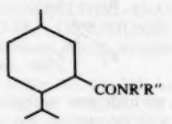
Division of Ser. No. 796,973, May 16, 1977, Pat. No. 4,150,052, which is a continuation of Ser. No. 486,566, Jul. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 221,755, Jan. 28, 1972, abandoned. This application Jan. 18, 1979, Ser. No. 4,332

Claims priority, application United Kingdom, Feb. 4, 1971, 3928/71; Feb. 4, 1971, 3934/71

Int. Cl.³ C07D *295/18, 213/75*

U.S. Cl. 544—176 **1 Claim**

1. Substantially odorless, non-volatile physiologically active cooling compounds of the formula



where R′ and R″, when taken together jointly represent a straight or branched chain alkylene group having a total of up to 10 carbon atoms, said alkylene group providing a chain of 4 or 5 carbon atoms the opposite ends of which are attached to the nitrogen atom to form a 5 or 6 membered heterocycle; a $—CH_2CH_2OCH_2CH_2—$ group, or a $CH_2CH_2NHCH_2CH_2$ group;
or, when taken separately, R′ represents hydrogen and R″ represents a pyridyl group.

4,226,989

MELAMINE-MONOPHTHALIMIDES

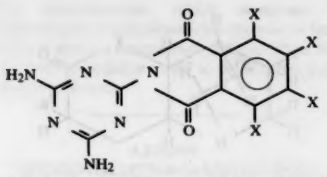
Roland R. DiLeone, Rowayton, and Jeno G. Szita, Norwalk, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 19, 1979, Ser. No. 58,883

Int. Cl.³ C07D *403/04*

U.S. Cl. 544—198 **4 Claims**

1. A compound defined by the formula



wherein each X represents a member selected from the group consisting of hydrogen and halogen atoms.

4,226,990

TRIAZINE-DIONES

Ian T. Kay, Wokingham, England, assignor to Imperial Chemical Industries Limited, London, England

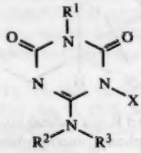
Filed Oct. 15, 1974, Ser. No. 515,090

Claims priority, application United Kingdom, Nov. 1, 1973, 50827/73; Feb. 15, 1974, 6959/74

Int. Cl.³ C07D *487/04*

U.S. Cl. 544—212 **3 Claims**

1. A triazine-dione compound of the formula:



wherein R^1 is an alkyl radical of 1 to 8 carbon atoms, R^2 is a hydrogen atom or an alkyl radical of 1 to 6 carbon atoms and R^3 together with the group X, forms a divalent radical Z linking the exocyclic nitrogen atom to which R^3 is attached to the nitrogen atom in the triazine ring, so as to form a second 5- or 6-membered ring, the radical Z being selected from the group consisting of oxalyl (—CO.CO—), 1,2-dihydroxyethylene (—CH(OH)—CH(OH)—), ethylene ($—CH_2CH_2—$), trimethylene ($—CH_2CH_2CH_2—$), and radicals of the formula $—CH_2NR^5CH_2—$ wherein R^5 is phenyl, an alkyl group of 1 to 10 carbon atoms or hydrogen.

4,226,991

PROCESS FOR PREPARING 3-ALKYLTHIOPROPIONIC ACID ESTERS

Yutaka Nakahara, Iwatsuki; Tohru Haruna, Okegawa, and Kenji Tazima, Kuwana, all of Japan, assignors to Argus Chemical Corp., Brooklyn, N.Y.

Filed Oct. 13, 1978, Ser. No. 950,976

Claims priority, application Japan, Oct. 17, 1977, 52/125007

Int. Cl.² C07D *251/34*

U.S. Cl. 544—221 **12 Claims**

1. A process for preparing a polyhydric alcohol 3-alkylthiopropionate polyolefin stabilizer capable of enhancing the resistance to deterioration and minimizing the formation of undesirable color and odor of a polyolefin resin when heated at 150° C., comprising the step of heating a reaction mixture containing at least one polyhydric alcohol having 3 to 6 alcoholic hydroxyl groups and 3 to 20 carbon atoms, provided that the number of carbon atoms is at least equal to the number of alcoholic hydroxyl groups, and for each mole of alcoholic hydroxyl group supplied by the polyhydric alcohol from 0.6 to 1.5 moles of a betamercaptopropionic acid compound selected from the group consisting of betamercaptopropionic acid and a lower alkyl ester thereof and from 0.6 to 2 moles of at least one alpha-olefin having 6 to 40 carbon atoms, and an amount effective to initiate reaction of a reaction initiator selected from the group consisting of azonitriles and organic peroxides having 4 to 40 carbon atoms, and subsequently recovering the polyhydric alcohol 3-alkylthiopropionate polyolefin resin stabilizer from the mixture.

4,226,992

AMINO-FUNCTIONALIZED NAPHTHALENE-1,2-DICARBOXYLIC ACID HYDROZIDES

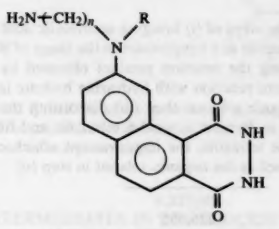
Robert T. Buckler, Edwardsburg, Mich., and Hartmut R. Schroeder, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 927,286, Jul. 24, 1978. This application Oct. 5, 1979, Ser. No. 82,110

Int. Cl.³ C07D *237/32*

U.S. Cl. 544—234 **3 Claims**

1. A compound of the formula:



wherein R is hydrogen or straight chain alkyl containing 1–4 carbon atoms and n=2–6.

4,226,993

AMINO-FUNCTIONALIZED PHTHALHYDRAZIDES

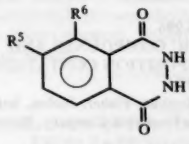
Robert T. Buckler, Edwardsburg, Mich., and Hartmut R. Schroeder, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 927,621, Jul. 24, 1978. This application Apr. 30, 1979, Ser. No. 34,250

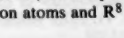
Int. Cl.³ C07D *237/32*; A61K *31/50*

U.S. Cl. 544—237 **6 Claims**

1. A compound of the formula:



wherein one of R^5 and R^6 is hydrogen and the other is $—NR^7R^8$; R^7 is hydrogen or straight chain alkyl having 1–4 carbon atoms and R^8 is



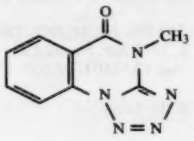
wherein n=2–8.

4,226,994
PROCESS FOR MAKING 4-METHYL-4,5-DIHYDROTETRAZOLO [1,5-a] QUINAZOLIN-5-ONE

John H. Marsden, and Norman Harrison, both of Blackley, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jun. 19, 1979, Ser. No. 49,902
Claims priority, application United Kingdom, Jul. 4, 1978, 28713/78
Int. Cl.[3] C07D *455/00*
U.S. Cl. 544—251 9 Claims

1. In a process for preparing the compound 4-methyl-4,5-dihydrotetrazolo[1,5-a]quinazolin-5-one having the structural formula:



which comprises the steps of (i) bringing anthranilic acid into reaction with cyanamide at a temperature in the range of 80° to 100° C.; (ii) bringing the reaction product obtained by the foregoing step (i) into reaction with hydrazine hydrate in the presence of an organic solvent; then (iii) diazotising the hydrazino compound so formed to yield a tetrazole; and finally (iv) methylating the tetrazole, the improvement which comprises using n-butanol as the organic solvent in step (ii).

4,226,995
PREPARATION PROCESS OF 2-CHLORO PYRIMIDINE

Claude G. Demosthene, Aramon, and Christian R. Aspisi, Boulbon, both of France, assignors to "Societe Anonyme" Expansia, Paris, France

Filed May 11, 1979, Ser. No. 38,177
Claims priority, application United Kingdom, May 31, 1978, 25655/78
Int. Cl.[3] C07D *239/30*
U.S. Cl. 544—334 3 Claims

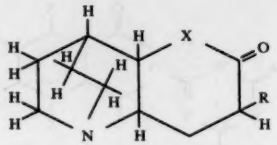
1. Preparation process of 2-chloro pyrimidine from 2-amino pyrimidine, hydrochloric acid and an alkali metal nitrite, the reagents being in substantially similar proportions as in the previously known methods, consisting in preparing a mixture of hydrochloric acid and of a non polar solvent of low boiling point, then adding 2-amino pyrimidine characterized in that, there is slowly added, at room temperature, the chloride of a metal selected from the group consisting of the transition metals, tin, antimony, thallium and zinc, then introduced, under an inert gas circulation, the selected nitrite at a temperature not exceeding 10° C. and finally poured the reaction mixture in iced water.

4,226,996
NOVEL HETEROCYCLIC COMPOUNDS AND PHARMACEUTICAL COMPOSITION CONTAINING THEM

Sasson Cohen, Tel-Aviv, and Abraham Fisher, Holon, both of Israel, assignors to The Purdue Frederick Company, Norwalk, Conn.

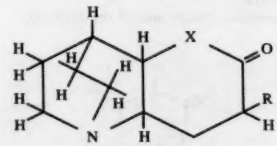
Division of Ser. No. 852,402, Nov. 17, 1977, which is a division of Ser. No. 655,650, Feb. 6, 1976, Pat. No. 4,083,985. This application Oct. 23, 1978, Ser. No. 953,514
Claims priority, application Israel, Nov. 11, 1975, 48453
Int. Cl.[2] C07D *491/04, 491/08*
U.S. Cl. 546—89 2 Claims

1. A process for the production of a salt of a compound of the formula:



wherein X is oxygen, and wherein R is a radical selected from the group consisting of lower alkyl, cyclopentyl and cyclohexyl, which comprises reacting 2-methylenequinuclidin-3-one with the corresponding radical -substituted diloweralkylmalonate in the presence of sodium alkoxide to give the corresponding 3-oxoquinuclidin-2-yl) malonate, reducing the latter with sodium borohydride to the corresponding (3-hydroxyquinuclidin-2-yl malonate, and treating the latter with a concentrated mineral acid to obtain the desired product, a 4-radical-6-oxa-1-azatricyclo (4.2.2.0^{2,7}) dodecan-5-one salt.

2. A process for the production of a salt of a compound of the formula:



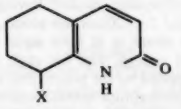
wherein X is oxygen and R is a radical selected from the group consisting of thienyl, phenyl, methylphenyl, methoxyphenyl, chlorophenyl, trifluromethylphenyl, aminophenyl, diloweralkylaminophenyl and benzyl, which comprises reacting 2-methylene quinuclidin-3-one with the corresponding radical-substituted diloweralkylacetate in the presence of sodium alkoxide to give the corresponding (3-oxoquinuclidin-2-yl) acetate, reducing the latter with sodium borohydride to the corresponding (3-hydroxyquinuclidin-2-yl) acetate, and treating the latter with a concentrated mineral acid to obtain the desired product, a 4-radical-6-oxa-1-azatricyclo(4.2.2.0^{2,7}) dodecan-5-one salt.

4,226,997
8-CHLORO-5,6,7,8-TETRAHYDRO-2-QUINOLONE AND 8-BROMO-5,6,7,8-TETRAHYDRO-2-QUINOLONE, THE HYDROCHLORIDE OR HYDROBROMIDE THEREOF AND PROCESS FOR THEIR MANUFACTURE

Helmut Meidert, Frankfurt am Main; Werner H. Müller, Eppstein, and Wilfried Pressler, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 13, 1979, Ser. No. 75,240
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1978, 2840437
Int. Cl.[3] C07D *215/22*
U.S. Cl. 546—157 12 Claims

1. 8-halo-5,6,7,8-tetrahydro-2-quinolone of the formula



in which X is chlorine or bromine, and the hydrohalide thereof.

4. Process for the manufacture of 8-chloro-5,6,7,8-tetrahydro-2-quinolone hydrochloride or 8-bromo-5,6,7,8-tetrahydro-

2-quinolone hydrobromide, which comprises reacting 3,4,5,6,7,8-hexahydro-2-quinolone with chlorine or bromine in an inert solvent and at a temperature of from 10° to 50° C. and heating the reaction solution to 60° to 80° C. after termination of the halogen addition.

4,226,998

1-BENZOTHIEPIN-4-CARBOXAMIDES

Melvin H. Rosen, Kendall, Fla., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 854,176, Nov. 23, 1977, Pat. No. 4,185,109, which is a continuation of Ser. No. 743,208, Nov. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 585,147, Jun. 9, 1975, abandoned, which is a continuation-in-part of Ser. No. 509,524, Sep. 26, 1974, abandoned. This application Sep. 20, 1978, Ser. No. 944,218

Int. Cl.³ A61K *31/445;* C07D *409/04*

U.S. Cl. 546—202 **1 Claim**

1. The N-(3,4-dichlorophenyl)-7-chloro-5-piperidino-2,3-dihydro-1-benzothiepin-1,1-dioxide-4-carboxamide.

4,226,999

PIPERIDYL ESTERS OF PHENOLALKYLENE CARBOXYLIC ACIDS

Roger Malherbe, Muttenz, and Michael Rasberger, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

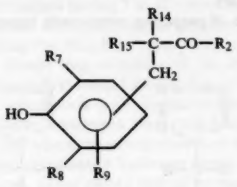
Division of Ser. No. 751,775, Dec. 16, 1976, Pat. No. 4,148,784. This application Jan. 5, 1979, Ser. No. 1,195

Claims priority, application Switzerland, Dec. 29, 1975, 16820/75; Nov. 19, 1976, 14580/76

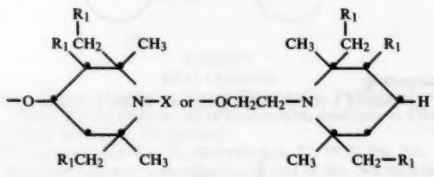
Int. Cl.³ C07D *211/46*

U.S. Cl. 546—222 **3 Claims**

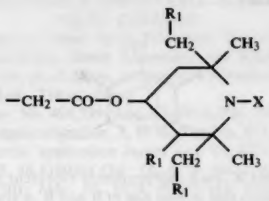
1. A member selected from the group consisting of (A) a compound of the formula



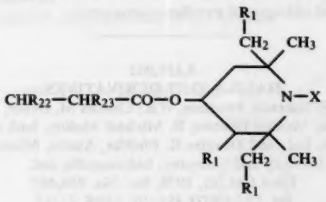
in which R_2 represents



R_1 is hydrogen or C_1–C_5-alkyl, R_7 and R_8 independently represent C_1–C_9-alkyl, C_7–C_9-aralkyl or C_5–C_8-cycloalkyl, R_9 is hydrogen or methyl, X represents (1) hydrogen, (2) C_1–C_4 alkyl, (3) allyl, (4) propargyl, (5) C_2–C_6 alkoxyalkyl, (6) acetyl, (7) acryloyl, (8)crotonoyl, (9) —CH_2—$COOR_{10}$ where R_{10} is C_1–C_4 alkyl, (10) —CH_2—$CH(R_{11})$—OH where R_{11} is H or methyl or (11) —$COOR_{13}$ where R_{13} is C_1 to C_4 alkyl, R_{14} is cyano, C_1–C_4 alkyl, or C_1 to C_6 alkyl sulphonyl, R_{15} is (1) hydrogen, (2) 4—OH-3,5-di C_1 to C_4 alkyl benzyl, (3) C_1 to C_{12} alkyl, (4) C_3 to C_4 alkenyl, (5) propargyl, (6) benzyl, (7) phenyl, (8) a group of the formula



wherein R_1 and X are as previously defined, or (9) a group of the formula



wherein R_1 and X are as previously defined and R_{22} and R_{23} are H or methyl, and (B) an acid addition salt thereof with an organic or inorganic acid.

4,227,000

INTERMEDIATES IN THE PROCESS FOR MAKING HISTAMINE ANTAGONISTS

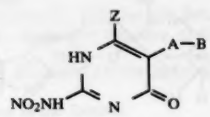
Thomas H. Brown, Welwyn Garden City, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Filed Apr. 6, 1979, Ser. No. 27,543

Int. Cl.³ C07D *239/34;* A61K *31/505*

U.S. Cl. 544—321 **9 Claims**

1. A 2-nitroaminopyrimidone of the formula:



in which Z is hydrogen or lower alkyl, A is C_1–C_5 alkylene or —$(CH_2)_pW(CH_2)_q$— where W is oxygen or sulphur and the sum of p and q is 1 to 4, and B is a naphthyl, 5- or 6- (2,3-dihydro-1,4-benzodioxinyl), or 4- or 5- (1,3-benzodioxolyl) group, or a phenyl group substituted with lower alkyl, lower alkoxy, halogen, benzyloxy, hydroxy, lower alkoxy-lower alkoxy, trifluoromethyl, di(lower alkyl)amino, phenoxy, halophenoxy, lower alkoxy-phenoxy, phenyl, halophenyl or lower alkoxyphenyl groups.

4,227,001

PREPARATION OF POLYCHLORINATED PYRIDINES FROM 2,4-DICHLORO-6-(TRICHLORO METHYL)PYRIDINE

Thomas J. Dietsche, Berkeley, and Jim Love, Walnut Creek, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

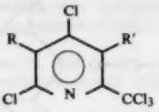
Continuation-in-part of Ser. No. 916,450, Jun. 19, 1978, abandoned. This application Mar. 1, 1979, Ser. No. 16,631

Int. Cl.³ C07D *213/26*

U.S. Cl. 546—345 **14 Claims**

1. A process for preparing chlorinated pyridine compounds

which comprises contacting, in liquid phase, a starting material of the formula:



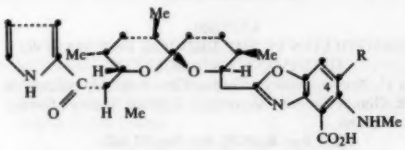
wherein R and R′ each independently represent chloro or H, with the proviso that at least one of R and R′ is always H, with chlorine at a temperature of at least about 160° C. to about 220° C. at superatmospheric pressures from about 190 psig to about 220 psig in the presence of a catalyst Lewis acid and amount thereof effective to catalyze the reaction, and thereafter recovering said chlorinated pyridine compounds.

4,227,002
HALO-A-23187 DERIVATIVES

Donner F. Babcock, Madison, Wis.; Charles M. Deber, Toronto, Canada; Manuel Debono; R. Michael Molloy, both of Indianapolis, Ind., and Douglas R. Pfeiffer, Austin, Minn., assignors to Eli Lilly and Company, Indianapolis, Ind.

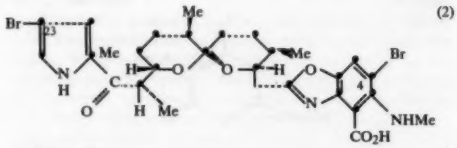
Filed Oct. 11, 1978, Ser. No. 950,487
Int. Cl.[2] C07D *493/10*; A61K *31/42*
U.S. Cl. 548—216 **7 Claims**

1. A compound selected from a group consisting of compounds having the following formulas:

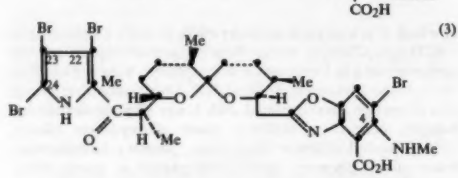


(1)

wherein R is bromine or chlorine;



(2)



(3)

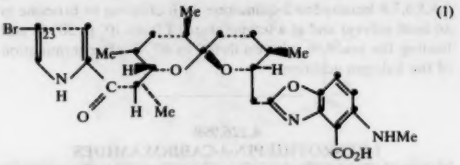
and the pharmaceutically acceptable cationic salts of (1), (2) and (3).

4,227,003
BROMO-A-23187 DERIVATIVES

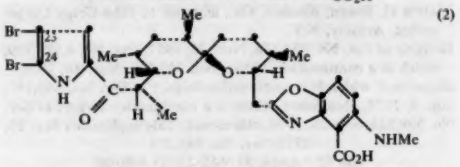
Manuel Debono, and R. Michael Molloy, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 11, 1978, Ser. No. 950,485
Int. Cl.[2] C07D *493/10*; A61K *31/42*
U.S. Cl. 548—216 **5 Claims**

1. A compound selected from a group consisting of compounds having the following formulas:



(1)



(2)

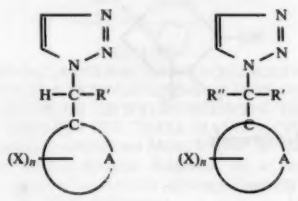
and the Pharmaceutically acceptable cationic salts of (1) and (2).

4,227,004
SYNTHESIS OF SUBSTITUTED 1-ARALKYL-1H-v-TRIAZOLES

Richard A. Wildonger, Newark, Del., assignor to ICI Americas Inc., Wilmington, Del.

Filed Jan. 2, 1979, Ser. No. 450
Int. Cl.[3] C07D *249/04*
U.S. Cl. 548—255 **7 Claims**

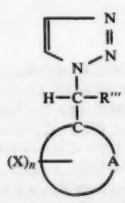
1. A process of preparing compounds represented by formulas



(1) (2)

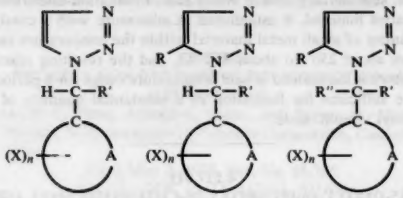
comprising:

(a) reacting a compound represented by the formula



(3)

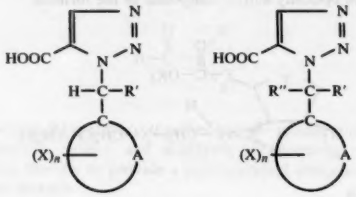
with an alkylating agent in the presence of a base and a solvent to produce a product containing at least one compound represented by the formulas



(4) (5) (6)

(b) separating the product of step (a) into the individual compounds prepared in step (a);

(c) reacting a compound represented by formulas (5) or (6) with an oxidizing agent to produce a product represented by the following formulas (7) and (8)



(7) (8)

respectively; and

(d) decarboxylating the product of step (c) by heating to form compounds represented by formulas (1) and (2), wherein A together with the carbon atom shown form a phenyl radical; R', R'' and R''' each independently represent a lower alkyl radical having 1 to 6 carbon atoms, a phenylalkyl radical having 7 to 12 carbon atoms, a mono-, di- or tri-lower alkoxy (C_1 to C_4) substituted phenylalkyl radical having 7 to 12 carbon atoms where the substitution is on the phenyl ring, a mono-, di- or tri-halogen substituted phenylalkyl radical having 7 to 12 carbon atoms where the substitution is on the phenyl ring, or a mono-, di- or tri-nitro substituted phenylalkyl having 7 to 12 carbon atoms where the substitution is on the phenyl ring and R''' also represents a hydrogen atom; X represents a halogen atom, lower alkoxy radical having 1 to 4 carbon atoms or a nitro radical, and n is 0 or 1.

4,227,005

DIALCOHOLS

Hans Batzer, Arlesheim; Jürgen Habermeier, Pfeffingen, and Daniel Porret, Fresens, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 541,911, Jan. 17, 1975, Pat. No. 4,161,594, which is a continuation-in-part of Ser. No. 82,074, Oct. 19, 1970, abandoned, which is a continuation-in-part of Ser. No. 870,547, Nov. 4, 1969, Pat. No. 3,629,263. This application Oct. 31, 1978, Ser. No. 956,523

Claims priority, application Switzerland, Nov. 11, 1968, 16803/68

The portion of the term of this patent subsequent to Dec. 21, 1988, has been disclaimed.

Int. Cl.³ C07D *233/74*

U.S. Cl. 548—312 **1 Claim**

1. A compound 1,3-di-(Beta-hydroxyethyl)-5,5-dimethyl-hydantoin which is a crystalline solid.

4,227,006

N^2-DANSYL-L-ARGININE DERIVATIVES, AND THE PHARMACEUTICALLY ACCEPTABLE ACID ADDITION SALTS THEREOF

Shosuke Okamoto, Kobe; Ryoji Kikumoto, Tokyo; Yoshikuni Tamao, Yokohama; Shinji Tonomura, and Kazuo Ohkubo, both of Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Division of Ser. No. 496,939, Aug. 13, 1974, Pat. No. 3,978,045. This application Jun. 1, 1976, Ser. No. 691,766

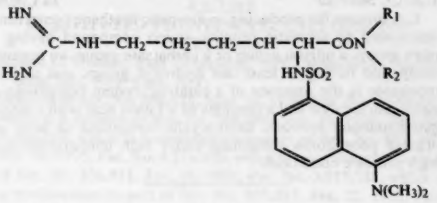
Claims priority, application Japan, Aug. 13, 1973, 48-090699; Oct. 16, 1973, 48-116035; Oct. 18, 1973, 48-117292; Dec. 10, 1973, 48-137501; Mar. 19, 1974, 49-031141; Mar. 25, 1974, 49-033260

The portion of the term of this patent subsequent to Jan. 17, 1995, has been disclaimed.

Int. Cl.³ C07C *129/08*

U.S. Cl. 560—10 **4 Claims**

1. N^2-dansyl-L-argininamides of the formula



wherein

R_2=H

R_1=—CH_2—CH_2—CO_2—CH_3.

4,227,007

DIURETHANES

Ulrich Schirmer, Heidelberg; Wolfgang Rohr, Mannheim; Bruno Wuerzer, and Kurt Fett, both of Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

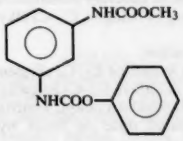
Filed Jan. 13, 1978, Ser. No. 869,323

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1977, 2703838

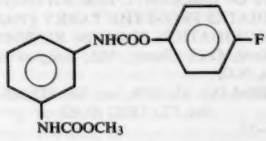
Int. Cl.² C07C *125/04*; A01N *9/20*

U.S. Cl. 560—25 **9 Claims**

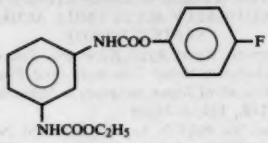
1. A diurethane of the formula



3. A diurethane of the formula



8. A diurethane of the formula



4,227,008

PROCESS FOR PREPARING AROMATIC URETHANES

Katsuharu Miyata; Makoto Aiga, and Seiji Hasegawa, all of Omuta, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Jul. 25, 1978, Ser. No. 927,779
Claims priority, application Japan, Jul. 25, 1977, 52-88440
Int. Cl.[2] C07C *125/04*
U.S. Cl. 560—25 14 Claims

1. A process for producing an aromatic urethane comprising interacting an aromatic primary amino compound having a nitro group, a nitroso group or a carbamate group, an organic compound having at least one hydroxyl group, and carbon monoxide in the presence of a catalytic system comprising a palladium catalyst and a complex of a Lewis acid with a nitrogen-containing aromatic heterocyclic compound or with an organic phosphorus compound under high temperature and high pressure conditions.

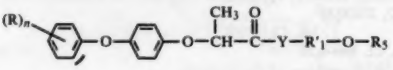
4,227,009

PHENOXYPHENOXY-PROPIONIC ACID DERIVATIVES

Manfred Koch, Kelkheim; Reinhard Handte, Hofheim am Taunus; Gerhard Hörlein; Heinrich Leditschke, both of Frankfurt am Main; Helmut Köcher, and Peter Langelüddeke, both of Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 24, 1977, Ser. No. 799,974
Claims priority, application Fed. Rep. of Germany, May 26, 1976, 2623558
Int. Cl.[3] C07C *69/76, 153/07;* A01N *43/40, 43/36*
U.S. Cl. 560—61 6 Claims

1. A 2-[4'-phenoxyphenoxy]-propionic acid derivative, or a salt thereof with a base, of the formula



in which

R means identical or different substituents selected from the group consisting of halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy;

n is 1 or 2;

Y is oxygen or sulfur;

R_1' is a linear or branched C_1–C_4 alkylene; and

R_5 represents C_1–C_6 alkyl, C_1–C_4 haloalkyl, C_2–C_8 alkoxyalkyl, C_3–C_{12} alkoxyalkoxyalkyl, hydroxyethyl, phenyl or phenyl substituted once or twice by halogen and/or C_1–C_3 alkyl.

4,227,010

RECOVERY OF DIMETHYL TEREPHTHALATE AND INTERMEDIATES FROM THE TARRY FRACTION OF COOXIDATION PROCESS RESIDUE

Horace E. Hood, Cecil County, Md., assignor to Hercofina, Wilmington, N.C.

Filed Oct. 13, 1978, Ser. No. 953,228
Int. Cl.[3] C07C *69/82*
U.S. Cl. 560—77 5 Claims

1. In a process for the heat treatment of the tarry fraction of DMT esterified oxidate residue to recover dimethyl terephthalate therefrom, the improvement wherein said tarry fraction, substantially free of water and of oxidation-esterification catalyst material, is established in admixture with a catalytic quantity of alkali metal material within the temperature range from about 250° to about 350° C., and the resulting reaction mixture is maintained in said temperature range for a period of time sufficient for formation of a substantial quantity of dimethyl terephthalate.

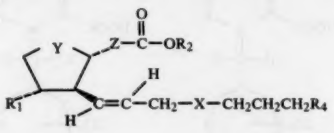
4,227,011

15-DEOXY-16-HYDROXY-16-CHLOROMETHYL OR BROMOMETHYL PROSTAGLANDINS OF THE E AND F SERIES

Sow-Mei L. Chen, Parkridge, N.J., and Charles V. Grudzinskas, Nyack, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 7, 1979, Ser. No. 46,516
Int. Cl.[3] C07C *177/00*
U.S. Cl. 560—121 5 Claims

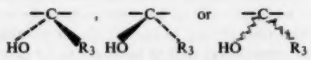
1. An optically active compound of the formula:



wherein

Y is

X is



R_1 is hydrogen or hydroxyl;

R_2 is hydrogen or C_1 to C_6 alkyl;

R_3 is chloromethyl and bromomethyl;

R_4 is hydrogen and C_1 to C_3 alkyl;

Z is selected from the group consisting of a divalent moiety of the formula $-(CH_2)_n-$, $-(CH_2)_mOCH_2-$ and $-(CH_2)_mSCH_2-$ wherein n is 5 to 7 and M is 3 to 5 and the racemic mixture thereof, and when R_1 is hydrogen, the pharmaceutically acceptable salts thereof.

4,227,012

OXIDATION OF METHYL BENZENES IN THE PRESENCE OF ACETIC ACID AND A DEHYDRATING AGENT

George Suld, Springfield; James E. Lyons, Wallingford, and Robert W. Shinn, Aston, all of Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Filed Nov. 3, 1978, Ser. No. 957,613
Int. Cl.[3] C07C *69/035*
U.S. Cl. 560—131 9 Claims

1. A process for the oxidation of methyl benzenes to form phenolic acetates, and formaldehyde or methylene diacetate, or mixtures thereof, which comprises contacting said methyl benzenes with air or oxygen, and acetic acid and P_2O_5, in the presence of a strong acid catalyst and benzaldehyde at temperatures of at least about 80° C. and pressures of at least about 1

atmosphere, said benzaldehyde being present in amounts of from about 0.01–1.0 mole based on the methyl benzene.

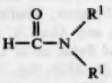
4,227,013

PROCESS FOR PREPARING POLYFUNCTIONAL COMPOUNDS

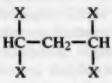
Howard C. Haas, Arlington, Mass., and Robert D. Moreau, Nashua, N.H., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 3, 1979, Ser. No. 35,705
Int. Cl.³ C07C *69/34, 147/14, 102/00*
U.S. Cl. 560—190 **14 Claims**

1. A process for preparing a polyfunctional methylene-bridged compound which comprises reacting a difunctional methylene-bridged compound having the formula X—CH$_2$—X, wherein each X is selected from the group consisting of —CONH$_2$, —COOR where R is alkyl and —SO$_2$R where R is alkyl, with an alkali metal in the presence of a disubstituted formamide having the formula



where each R^1 is alkyl or together both R^1 groups complete a heterocyclic moiety; and acidifying the resulting reaction mixture, thereby to provide a polyfunctional compound having the formula



where each X group has the meaning previously ascribed.

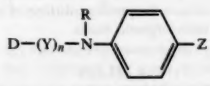
4,227,014

4-[(CYCLOALKYL OR CYCLOALKENYL SUBSTITUTED)AMINO, ALKYLAMINO OR ALKENYLAMINO]BENZOIC ACIDS AND SALTS THEREOF

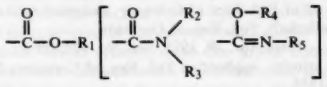
Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 27, 1978, Ser. No. 881,457
Int. Cl.² C07C *101/60*
U.S. Cl. 562—457 **99 Claims**

1. A compound of the formula:



wherein Z is a moiety of the formula:



wherein

R_1 is hydrogen;

R is hydrogen;

n is either zero or one;

Y is a divalent radical selected from the group consisting of unbranched or branced C_1–C_{13} alkylene or alkenylene and is either unsubstituted or substituted with at least one C_1–C_4 alkyl group;

and D is selected from the group consisting of C_3–C_{16} cycloalkyl or C_4–C_{17} cycloalkenyl and is either unsubstituted or substituted with at least one C_1–C_{13} alkyl, C_4–C_8 cycloalkyl, decahydronaphthyl, methylene, ethylidene, or isopropylidine group;

with the proviso that the total number of carbon atoms in D and Y shall not exceed twenty; and with the further proviso that when n is 1, D is not an unsubstituted cyclopropyl nor a cyclopropyl substituted with at least one C_1–C_{13} alkyl;

and the pharmaceutically acceptable non-toxic acid-addition and cationic salts thereof.

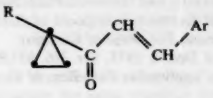
4,227,015

SUBSTITUTED PHENYLVINYL CYCLOPROPYL KETONES

Joseph C. Collins, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 885,575, Mar. 13, 1978, Pat. No. 4,182,729, which is a division of Ser. No. 740,358, Nov. 10, 1976, Pat. No. 4,093,736, which is a continuation-in-part of Ser. No. 545,486, Jan. 30, 1975, Pat. No. 4,171,378, which is a continuation-in-part of Ser. No. 436,611, Jan. 25, 1974, Pat. No. 3,917,718, which is a continuation-in-part of Ser. No. 265,333, Jun. 22, 1972, Pat. No. 3,829,475. This application Feb. 14, 1979, Ser. No. 12,202
Claims priority, application United Kingdom, Jun. 18, 1973, 28793/73
Int. Cl.³ C07C *65/38, 69/76, 87/62, 103/42, 143/78*
U.S. Cl. 562—459 **7 Claims**

1. A compound of the formula



wherein R is hydrogen or lower-alkyl of 1 to 4 carbon atoms, and Ar is phenyl substituted by a member selected from the group consisting of carboxy, carbo-lower-alkoxy of 2 to 4 carbon atoms, alkanoylamino of 1 to 4 carbon atoms, dialkylamino where alkyl has from 1 to 4 carbon atoms, and aminosulfonyl.

4,227,016

PROCESS FOR MANUFACTURING α-CHLOROARYLACETIC ACIDS

Emmanuel Herman, Sarcelles, France; Helmut Diery, Kelkheim, Fed. Rep. of Germany; Michel Soreau, Montmorency, and Yani Christidis, Paris, both of France, assignors to Hoechst France, Puteaux, France

Filed Dec. 28, 1977, Ser. No. 865,285
Claims priority, application France, Dec. 30, 1976, 76 39628
Int. Cl.³ C07C *57/58*
U.S. Cl. 562—465 **19 Claims**

1. Process for producing alphachloroarylacetic acids comprising mixing glyoxylic acid and hydrochloric acid and then reacting with an aromatic compound comprising a benzene ring and having thereon at least one substituent group selected from the group consisting of alkyl, aryl, hydroxy, alkoxy and aryloxy, and having at least one free position capable of fixing a —CHCl—COOH group.

4,227,017

PROCESS FOR THE PREPARATION OF AN ALKALI-METAL BENZOATE BESIDES A BENZYL ALCOHOL

Cornelis Jongsma, Oirsbeek, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed May 17, 1979, Ser. No. 40,152

Claims priority, application Netherlands, May 19, 1978, 7805415

Int. Cl.[2] **C07C** *51/42, 29/00*

U.S. Cl. 562—494 **14 Claims**

1. A process for recovering sodium benzoate besides benzyl alcohol from a reaction residue resulting from the manufacture of benzoic acid by the oxidation of toluene and containing contaminated benzyl benzoate therein, said process consisting essentially in:

(a) distilling said residue containing contaminated benzyl benzoate therein at a temperature in the range of about 80° C. to about 240° C. and in the presence of from about 0.01 to about 10% by weight of a basic substance calculated on the weight of said residue being distilled;

(b) hydrolyzing the distillate resulting from step (a) with an aqueous solution of sodium hydroxide or sodium carbonate at a temperature in the range of about 30° C. to about 300° C. thereby producing an aqueous solution containing the sodium benzoate and benzyl alcohol;

(c) crystallizing and recovering the sodium benzoate from the resulting solution of step (b); and

(d) distilling and recovering the benzyl alcohol from the resulting solution of step (b).

4,227,018

ODORLESS BENZOIC ACID PROCESS

Wilhelm Wolf, Krefeld, and Meinhard Puhl, Neumorschen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 4, 1975, Ser. No. 637,546

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1974, 2460822

Int. Cl.[3] **C07C** *51/42*

U.S. Cl. 562—494 **10 Claims**

1. Process for making substantially odorless benzoic acid which consists essentially of spray drying benzoic acid contaminated with diphenyl to obtain substantially spherical crystals of said benzoic acid and thereafter passing an inert gas selected from the group consisting of nitrogen, carbon dioxide, a noble gas or air having an oxygen content of less than 8% by volume or a mixture thereof at a temperature of 50°–100° C. through said benzoic acid spherical crystals contaminated with diphenyls.

4,227,019

11-SUBSTITUTED PROSTAGLANDINS

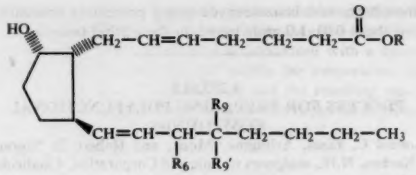
George W. Holland, Cedar Grove; Jane L. Jernow, Verona, and Perry Rosen, North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 780,878, Mar. 24, 1977, abandoned, which is a division of Ser. No. 614,044, Sep. 17, 1975, Pat. No. 4,036,871, which is a division of Ser. No. 480,458, Jun. 18, 1974, Pat. No. 4,052,446, which is a continuation-in-part of Ser. No. 386,117, Aug. 6, 1973, abandoned. This application Apr. 2, 1979, Ser. No. 26,126

Int. Cl.[2] **C07C** *177/00*

U.S. Cl. 562—503 **2 Claims**

1. A compound of the formula:



wherein R is hydrogen or lower alkyl, R_6 is hydroxy, lower alkanoyloxy, benzyloxy, benzoyloxy, trityloxy, tetrahydropyranyloxy, benzhydryloxy or triloweralkylsilyloxy; R_9 is fluoro, R_9 is hydrogen or lower alkyl; or enantiomers or racemates thereof.

4,227,020

METHOD OF PREPARING NAPHTHENIC ACIDS

Bagadur K. Zeinalov, ulitsa Nizami 73, kv. 19; Vagab S. Aliev, ulitsa Nizami 66, kv. 10; Arif A. Akhundov, 5 Alatinskaya ulitsa, 3, kv. 13, all of Baku; Jury N. Bocharov, ulitsa Dokunina, 3, kv. 13, Moscow; Vladimir D. Lugovskoi, ulitsa Vurguna, 8/a, kv. 43, and Akop A. Miramanian, 6 Mikroraion, 6, kv. 37, both of Baku, all of U.S.S.R.

Filed Jul. 30, 1979, Ser. No. 62,127

Int. Cl.[2] **C11C** *1/00;* **C09F** *5/08*

U.S. Cl. 562—511 **1 Claim**

1. A method for preparing naphthenic acids consisting in that a petroleum fraction boiling out in the temperature range of 250°–350° C. is oxidized with oxygen taken in the quantity of 0.06–0.065 kg/kg per hour at a temperature of 135°–140° C. in the presence of a catalyst consisting of 30–40 percent by weight of manganese naphthenate and 60–70 percent by weight of potassium naphthenate taken in the quantity of 1.2–2.5 percent of the weight of the starting stock; the product of the oxidation reaction, which is a mixture of organic oxygen-containing compounds containing naphthenic and hydroxynaphthenic acids, is diluted with an organic solvent taken in the weight ratio of 1:1–1.5 to the reaction mixture which is inert toward said mixture in order to precipitate hydroxynaphthenic acids which are then separated; the solution of organic oxygen-containing compounds in said organic solvent is treated with an aqueous solution of sodium hydroxide at a temperature at which said organic solvent boils to separate the obtained aqueous solution of sodium naphthenates from the solution of unsaponifiable organic oxygen-containing compounds in said organic solvent; said aqueous solution of sodium naphthenates is treated with diethyl sulphate at a temperature of 90°–95° C. to obtain ethyl naphthenates from which the fraction of ethyl naphthenates boiling out in the temperature range of 75°–170° C. is separated by rectification in vacuum of 3 mm Hg; said isolated fraction is treated with an aqueous solution of sodium hydroxide, and the end product is finally isolated from the obtained aqueous solution of sodium naphthenates by treating with organic acids.

4,227,021

PRODUCTION OF ADIPIC ACID FROM ACIDIC WASH WATERS

Otto-Alfred Grosskinsky, Ludwigshafen; Norbert Petri, Frankenthal; Johannes Hein, Weinheim, and Hans Leitner, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 28, 1978, Ser. No. 901,235

Claims priority, application Fed. Rep. of Germany, May 14, 1977, 2721858

Int. Cl.[2] **C07C** *51/24, 55/14*

U.S. Cl. 562—513 **8 Claims**

1. In a process for producing adipic acid from the acidic wash waters which arise in the process for oxidizing cyclohexane with air, by treatment with nitric acid at from 10° to 50° C., with removal of the heat of reaction by external cooling, the improvement which comprises leading the reaction mixture at

a flow velocity of at least 2.0 m/sec as a thin layer spirally in counter-current to the coolant, under conditions which do not perturb the flow of the reaction mixture.

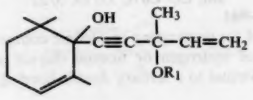
4,227,022

ACETYLENIC DIOLS AND MONOETHERS THEREOF

Michael Rosenberger, Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 791,678, Apr. 28, 1977, abandoned, which is a division of Ser. No. 723,411, Sep. 15, 1976, Pat. No. 4,045,476, which is a division of Ser. No. 585,224, Jun. 9, 1975, Pat. No. 4,000,198. This application Oct. 10, 1978, Ser. No. 949,849
Int. Cl.[3] C07C *43/303, 35/18, 43/168*
U.S. Cl. 568—591 2 Claims

1. The compound of the formula:



wherein R_1 is hydrogen, alpha-lower alkoxy-lower alkyl, tetrahydropyranyl, benzyl, benzhydryl, t-butyl or 4-methyl-5,6-dihydro-2H-pyranyl.

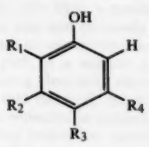
4,227,023

PROCESS FOR THE SELECTIVE ORTHO-ALKYLATION OF PHENOLIC COMPOUNDS

Motoo Kawamata, Yokohama; Tadamitsu Kiyoura, Kamakura; Kazushi Ohshima, Yokohama; Yasuo Kogure, Yokohama; Akihide Kudoh, Yokohama, and Makoto Kotani, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Dec. 4, 1978, Ser. No. 966,356
Claims priority, application Japan, Dec. 13, 1977, 52-148758
Int. Cl.[3] C07C *37/14, 39/06*
U.S. Cl. 568—804 4 Claims

1. In a process for the selective orthoalkylation of a phenolic compound having at least one orthopositioned hydrogen atom and having the general formula



wherein R_1, R_2, R_3 and R_4 represent hydrogen atoms or aliphatic hydrocarbon radicals, by catalytically reacting the phenolic compound with a saturated aliphatic alcohol having from 1 to 4 carbon atoms, in the vapor phase, the improvement which comprises carrying out the reaction at at a temperature of from 300° C. to 500° C. with a molar ratio of phenolic compound to alcohol ranging from 1:1 to 1:15 in the presence of a catalyst consisting of manganese oxide, silicon oxide and one or more oxides selected from the group consisting of magnesium oxide, calcium oxide, strontium oxide and barium oxide, said manganese and silicon contained in the mixed oxide catalyst being present in such a proportion as to provide an atomic ratio of manganese to silicon ranging from 100:0.01 to 100:20 and said one or more oxides selected from the group consisting of magnesium oxide, calcium oxide, strontium oxide and barium oxide being present in such an amount as to provide an atomic ratio of magnesium to additive metals ranging from 100:0.01 to 100:30.

4,227,024

PREPARATION OF 2,6-XYLENOL AND CATALYST COMPOSITION USEFUL THEREFOR

Bruce E. Leach, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Jun. 4, 1979, Ser. No. 45,571
Int. Cl.[3] C07C *37/14, 39/06*
U.S. Cl. 568—804 7 Claims

1. A process for preparing 2,6-xylenol in high selectivity wherein the process comprises reacting phenol, o-cresol or mixtures thereof with methanol in the presence of water using a catalyst consisting essentially of the following materials in percent by weight: Fe_2O_3—about 90 to about 97; SnO_2—about 0.5 to about 5; Cr_2O_3—about 0.5 to about 5; K_2O—about 0.01 to about 1, said process being characterized further in that:

(a) prior to use the catalyst has been treated with hydrogen at a temperature of 300° to 500° C. at a flow rate of 2 to 6 volumes of hydrogen per minute per volume of reactor for 2 to 12 hours;

(b) there is present about 1 to 10 moles of methanol per mole of phenol and/or o-cresol;

(c) the amount of water is about 5 to about 15 weight percent, based on the total amount of phenol, o-cresol and methanol;

(d) the amount of catalyst expressed as LHSV is about 0.1 to about 5;

(e) the temperature is in the range of about 380° to about 420° C.;

(f) the pressure is from atmospheric to 1,000 psig; and

(g) the product mixture contains at least 99 weight percent o-cresol and 2,6-xylenol.

4,227,025

REACTIVATION OF ARSENIC-POISONED NOBLE METAL CATALYST FOR REMOVAL OF ACETYLENE

Dean P. Montgomery, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 13, 1979, Ser. No. 11,743
Int. Cl.[3] C07C *5/03*
U.S. Cl. 585—259 5 Claims

1. In a process for the effective removal of acetylene from a first gas feed containing the same, together with small quantities of arsenic in the form of a gaseous compound thereof, which comprises feeding said gas together with hydrogen at an acetylene removal temperature in contact with a noble metal hydrogenation catalyst, wherein the activity of the catalyst falls off due to arsenic poisoning thereof, the steps which comprise discontinuing the feeding of said first gas when activity of the catalyst has been reduced, feeding a second arsenic-free acid together with hydrogen into contact with said catalyst to effect a purging operation, elevating gradually the temperature of the catalyst until its activity is substantially restored, then discontinuing the feeding of said second gas and then resuming feeding of said first gas and hydrogen to the catalyst.

4,227,026

DEHYDROGENATION METHOD AND NONACIDIC MULTIMETALLIC CATALYTIC COMPOSITE FOR USE THEREIN

John F. Flagg, Rosemont, and George J. Antos, Arlington Heights, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 758,285, Jan. 10, 1977, Pat. No. 4,110,199. This application Aug. 10, 1978, Ser. No. 932,576
The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.
Int. Cl.[2] C07C *5/38*
U.S. Cl. 585—434 27 Claims

1. A method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting the hydrocarbon, at dehydrogenation conditions, with a catalytic composite comprising a porous carrier material containing, on an elemental basis,

about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % cobalt, and about 0.1 to about 10 wt. % uranium; wherein the platinum group, catalytically available cobalt and uranium components are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group component is present in the elemental metallic state; wherein substantially all of the uranium component is present in an oxidation state above that of the elemental metal; and wherein substantially all of the catalytically available cobalt component is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under dehydrogenation conditions or in a mixture of these states.

4,227,027

RECYCLABLE BORON TRIFLUORIDE CATALYST AND METHOD OF USING SAME

Robert E. Booth; Francis E. Evans, both of Hamburg; Richard E. Eibeck, Orchard Park, and Martin A. Robinson, Amherst, all of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 951,911, Oct. 16, 1978. This application Nov. 23, 1979, Ser. No. 96,955

Int. Cl.[3] **C07C** *3/56, 3/18*

U.S. Cl. 585—465 **10 Claims**

1. In a method of reacting at least one unsaturated hydrocarbon in an alkyl transfer reaction of the type catalyzed by boron trifluoride, the improvement which comprises conducting the reaction in the presence of a catalytic amount of an adduct formed by saturating a butanediol with boron trifluoride and recovering the adduct from the reaction mixture and recycling the adduct.

4,227,028

REGIOSELECTIVE SUBSTITUTION AT CARBON ATOM VINICAL TO DOUBLY BONDED TERTIARY CARBON ATOM BY SULFUR DIOXIDE CATALYSTS

Divakaran Masilamani, Morristown, and Milorad M. Rogic, Whippany, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 862,313, Dec. 20, 1977. This application Mar. 1, 1979, Ser. No. 16,578

Int. Cl.[2] **C07C** *13/18, 5/22*

U.S. Cl. 585—941 **5 Claims**

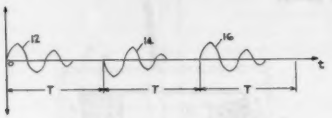
1. A method for deuterating an olefinic compound having a first nucleus of hydrogen or isotope thereof attached to a carbon atom vicinal to a tertiary double bonded carbon atom comprising:

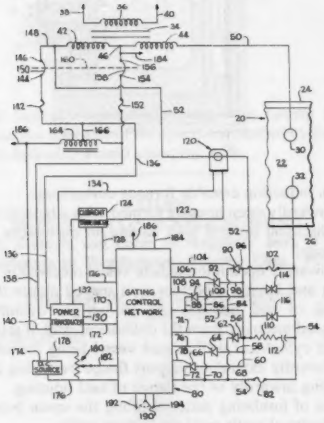
maintaining said compound in solution in liquid sulfur dioxide and providing the oxide of a hydrogen isotope in the sulfur dioxide solution whereby said first nucleus is exchanged in said compound for a nucleus of a hydrogen isotope present in the sulfur dioxide solution.

4,227,029
METHOD AND APPARATUS FOR ELIMINATING D.C. IN AN ELECTRIC GLASS MELTING FURNACE

James R. Joseph, Brockway, Pa., assignor to Brockway Glass Company, Inc., Brockway, Pa.

Filed May 15, 1978, Ser. No. 905,586
Int. Cl.[2] C03B 5/02; G05F 1/44
U.S. Cl. 13—6 12 Claims





1. In an electrical glass melting furnace including glass melting electrode means and means for supplying alternating electricity, a circuit for controlling the supply of said alternating electricity to said electrode means comprising:

(a) circuit means for providing a conductive path between said supply means and said electrode means;

(b) means in said path to selectively alter the electrical conduction of said path in a manner providing successive periods of alternating electricity each including a number of half cycles to said electrode means; and

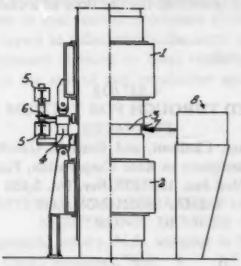
(c) control means connected in controlling relation to said conduction altering means for controlling the operation thereof, said control means causing one period of said alternating electricity supplied to said electrode means to begin with a polarity opposite that of the alternating electricity supplied during another immediately preceding period and causing adjacent periods of said alternating electricity to have the same number of half cycles, said control means comprising first pulse generating means for supplying command pulses to said conduction altering means for causing electrical conduction of one polarity in said path, second pulse generating means for supplying command pulses to said conduction altering means for causing electrical conduction of an opposite polarity in said path, and conduction mode control means for controlling the operation of said first and second pulse generating means in an alternating manner from period to period and in a manner such that adjacent periods include the same number of half cycles whereby whichever of said pulse generating means was the first to operate during the immediately preceding period of alternating electricity supplied to said electrode means the other pulse generating means is the first to operate during the next immediately adjacent period;

(d) whereby any component of direct electricity in said path is cancelled to zero when averaged over said two of said adjacent periods having said same number of half cycles and any direct electricity in said path is eliminated or significantly minimized during operation of said furnace.

4,227,030
ARC FURNACE ELECTRODE SLIP MONITORING DEVICE

Heinz W. H. Osterwold, Roodepoort, South Africa, assignor to National Institute for Metallurgy, Randburg, South Africa

Filed Jun. 29, 1979, Ser. No. 53,553
Claims priority, application South Africa, Jul. 14, 1978, 78/4025
Int. Cl.[2] H05B 7/10
U.S. Cl. 13—14 9 Claims



1. An arc furnace electrode slip monitoring device comprising a frame-work adapted to be held fixed relative to a movable electrode a movable unit supported by said frame-work and movable in reciprocating manner along a predetermined path which is substantially parallel to the direction of movement of an electrode, an electrode engaging member movable transverse to the direction of movement of the movable unit to be capable, in use, of firmly engaging an electrode during movement of the movable unit in one direction but to be disengaged therefrom during movement in the opposite direction, means for detecting the position of the movable unit along its path of movement, and further means for counting the number of reciprocal movements executed by the movable unit.

4,227,031
NONCONSUMABLE ELECTRODE FOR MELTING METALS AND ALLOYS

Boris E. Paton, ulitsa Chkalova, 41a, kv. 26; Jury V. Latash, ulitsa Artema, 55, kv. 23; Georgy M. Grigorenko, Sapernoe pole, 26a, kv. 39, all of Kiev; Jury V. Lisovoi, Irpen, ulitsa Sovetskaya, 24; Viktor V. Stepanenko, Vasilkov 1, ulitsa Pushkina, 15, both of Kievskaya oblast, and Grigory B. Asoiants, ulitsa Mechnikova, 18, kv. 19, Kiev, all of U.S.S.R.

Filed May 18, 1979, Ser. No. 40,220
Int. Cl.[2] H05B 7/08
U.S. Cl. 13—18 A 5 Claims

1. A nonconsumable electrode for melting metals and alloys, comprising:

a hollow cylindrical body;

a hollow detachable tip made in the form of a body of revolution coaxial with said hollow cylindrical body and secured to one of the ends thereof, said hollow tip having:

a lateral cylindrical non-arcing portion;

a convex arcing end portion;

a solenoid, for generating a magnetic field, having its lower end located within the cavity of said tip, said cavity being

defined by said lateral cylindrical non-arcing portion of said hollow tip;

a partition coaxially mounted in the cavity of said hollow body and of said hollow tip so that between said partition and the walls of said hollow body and of said hollow tip a passageway is formed for the flow of a coolant.

4,227,032

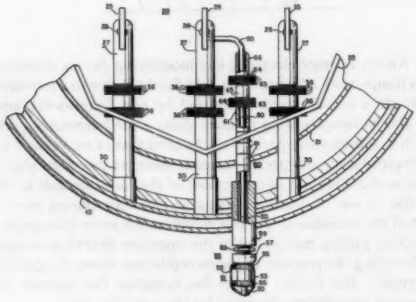
POWER FEED THROUGH FOR VACUUM ELECTRIC FURNACES

William R. Jones, Chalfont, and Rush B. Gunther, Abington, both of Pa., assignors to Abar Corporation, Feasterville, Pa.

Filed Jan. 15, 1979, Ser. No. 3,658

Int. Cl.[3] H05B *3/08, 7/16*

U.S. Cl. 13—20 **5 Claims**



1. A power feed through for vacuum electric furnaces having hostile environment therein and containing electrically conductive ions capable of deposition on objects within the furnace which comprises

a work support interiorly supported in the furnace and having an electrically conductive portion,

an electrically insulated power conductor extending through the furnace wall and connected to said conductive portion of said work support,

covering members for said power conductor comprising a plurality of separate non-electrical conductive elements in stacked relation on said power conductor and in engagement along said power conductor and having a portion extending exteriorly of the furnace,

shielding means mounted on said conductor in spaced relation to said work support for shielding contiguous portions of said covering members from metallic deposition thereon,

said shielding means comprising a plurality of parallel closely spaced readily replaceable discs of electrical non-conducting material, and

vacuum sealing means outside said furnace for said covering members.

4,227,033

INDUCTION CRUCIBLE FURNACE

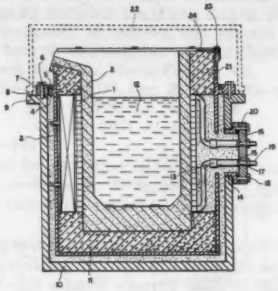
Ivan D. Nikolov; Pavel M. Minchev; Marin A. Dimitrov; Assen P. Georgiev, and Iliya G. Chorbov, all of Sofia, Bulgaria, assignors to Institute po Metaloznanie i Technologia na Metalite, Sofia, Bulgaria

Filed Feb. 27, 1979, Ser. No. 15,647

Claims priority, application Bulgaria, Feb. 27, 1978, 38842

Int. Cl.[2] H05B *5/00*

U.S. Cl. 13—27 **2 Claims**



1. An induction crucible furnace comprising:

an upwardly open housing formed with a bottom wall and a cylindrical upright wall having an outwardly extending flange;

an upwardly open intermediate vessel received in said housing and having a bottom wall spaced above the bottom wall of said housing and an upright cylindrical wall spaced inwardly from the cylindrical wall of said housing, said cylindrical wall of said vessel being formed with an outwardly extending support flange overlying and terminating inwardly of the flange of said housing;

a mass of insulating material filling the space between said cylindrical walls and said bottom walls;

a crucible for receiving a melt received within said vessel and spaced inwardly therefrom;

induction heating means surrounding said crucible and received within said vessel, said induction heating means including induction heating coils and yokes;

fastener means including bolts traversing said cylindrical wall of said vessel for securing said induction heating means and said crucible in said vessel;

insulating means interposed between said crucible and said vessel around said induction heating means; and

a cover fitted over said crucible, said vessel and said housing and sealingly engaging the flange of said housing outwardly of the flange of said vessel to enable selective pressurization and evacuation of a space above the melt in said crucible.

4,227,034

EARTH GROUND ASSEMBLY INCLUDING AN ELECTRODE AND ROD MEANS WHICH MAY BE DRIVEN INTO THE GROUND

Bernard P. J. M. van Rijswijck, 16, Eikenlaan, St. Michielsgestel, Netherlands

Filed May 22, 1978, Ser. No. 908,500

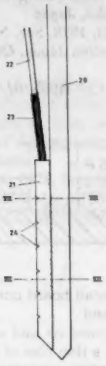
Claims priority, application Netherlands, May 20, 1977, 7705571

Int. Cl.[3] H01R *4/66*

U.S. Cl. 174—7 **3 Claims**

1. An earth ground assembly comprising an earth electrode, a rod which may be driven into the ground, and at least one helically wound clamping wire surrounding the lower end portion of said earth electrode and being secured at its lower

end portion to the lower end portion of the rod, said lower end portion of the rod having a tube-like portion surrounding at least the lower end portion of the helically wound clamping



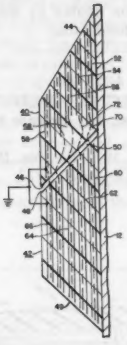
wire, said helically wound clamping wire having a pitch greater than the diameter of the space surrounded by the windings of the helically wound clamping wire.

4,227,035

MODULAR CONDENSER BUSHING

Robert W. Runnels, and Loren B. Wagenaar, both of Muncie, Ind., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 15, 1978, Ser. No. 905,673
Int. Cl.³ H01B *17/28*
U.S. Cl. 174—15 BH **7 Claims**



1. An electrical condenser bushing comprising:

an axially extending electrical conductor; and

first and second condenser elements each formed of concentric axially extending electrically conductive layers separated by like electrical insulating material having a predetermined dielectric constant, said first and second condenser elements being coaxially disposed around said conductor and axially spaced apart to define a gap of predetermined width between adjacent end portions thereof, said gap being filled with an electrically insulating material having a predetermined dielectric constant, which dielectric constant is different than the dielectric constant of the electrically insulating material of said first and second condenser elements;

said electrically conductive layers in each of said first and second condenser elements having predetermined electrical potentials when said electrical conductor is energized, forming equipotential lines between their adjacent end portions;

the ends of the conductive layers in the first condenser element being axially spaced in varying increments from the end portion of said first condenser element which is adjacent to the gap, to define a conductive layer free space;

the ends of the conductive layers in the second condenser element being disposed in proximity with the end portion of said second condenser element which is adjacent to the gap;

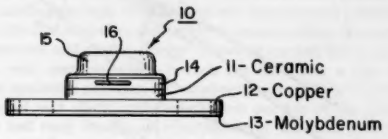
the end portion of said second condenser element which is adjacent to an end portion of the first condenser element being disposed at a predetermined angle with respect to the axis of the conductor, said angle and the ratio of the dielectric constant of the insulating material in said gap to the dielectric constant of the insulating material forming said first and second condenser element being selected to cause the equipotential lines extending from said conductive layers in said second condenser element to the conductive layers at substantially the same potential in said first condenser element to bend radially outward with respect to the axis of said conductor upon entering said gap.

4,227,036

COMPOSITE FLANGED CERAMIC PACKAGE FOR ELECTRONIC DEVICES

William Fitzgerald, Asbury, N.J., assignor to Microwave Semiconductor Corp., Somerset, N.J.

Filed Sep. 18, 1978, Ser. No. 943,487
Int. Cl.² H05K *7/20*
U.S. Cl. 174—16 HS **6 Claims**



1. In a package for electronic devices of the type comprising a heat conducting ceramic base member and a metal flange secured to said base for dissipating heat from said base, the improvement wherein said flange comprises a bi-layer composite bi-metallic flange comprising a first layer of heat conducting metal having a thermal conductivity and a thermal coefficient of expansion appreciably greater than that of said base and, on the side of said first layer opposite said ceramic base, a second layer of metal secured to said first layer having a thermal coefficient of expansion approximately equal to that of the ceramic.

4,227,037

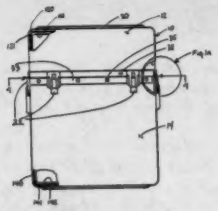
SHIELDED NON-METALLIC CONTAINER

Paul L. Layton, Irvine, Calif., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed May 29, 1979, Ser. No. 43,206
Int. Cl.³ H05K *9/00*
U.S. Cl. 174—35 MS **8 Claims**

1. A container including complementary upper and lower portions, each portion adapted to mate with and engage to define an enclosed inner chamber, said upper and lower portions each having laminated outer casings wherein a non-met-

allic, electrically conductive, inner layer is integrally molded with and bonded to and between at least two outer non-metal-



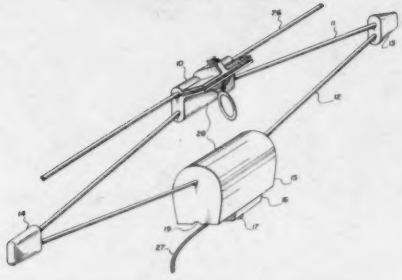
lic reinforcing layers to shield said inner chamber from electromagnetic and radio frequency interference.

4,227,038

VIBRATION ISOLATOR CONNECTOR

James Mitchell, Regina, Canada, assignor to Saskatchewan Power Corporation, Regina, Canada

Filed Feb. 17, 1978, Ser. No. 878,986
Claims priority, application Canada, Mar. 18, 1977, 274294
Int. Cl.³ H02G *7/14*
U.S. Cl. 174—42 **10 Claims**



1. A vibration isolator connector providing an electrical connection between a fixed apparatus and a suspended linear electrically conductive body, comprising:

a vibration absorbing and reducing weight electrically connected to the fixed apparatus by a connector attached to the weight; and

electrically conductive energy absorbing resilient suspension means connected to the weight, which suspension means resiliently suspends and separates the weight from the linear electrically conductive body and forms an electrical connection between the linear body and the connector attached to the weight.

9. A method of making an electrical connection between fixed apparatus and a suspended linear conductor comprising the steps of:

resiliently suspending a weight from the linear conductor through an electrically conductive, resilient member connected to the linear conductor and the weight;

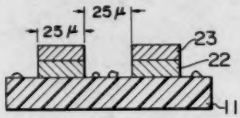
connecting a flexible, electrical conductor between the weight and the fixed apparatus such that the flexible, electrical conductor is electrically connected through the weight and the resilient member to the suspended linear conductor.

4,227,039

THIN-FILM MICROCIRCUIT BOARD

Ichiro Shibasaki; Kaoru Ohmura; Takeo Kimura, and Hidehiko Kobayashi, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 23, 1978, Ser. No. 953,497
Claims priority, application Japan, Oct. 24, 1977, 52-126730; Nov. 7, 1977, 52-132524
Int. Cl.² H05K *01/14*
U.S. Cl. 174—68.5 **9 Claims**



1. A thin film microcircuit board comprising:

a dielectric substrate; and

a thin-film laminate formed on said substrate, said thin-film laminate comprising a thin-film of a dispersion-metal dispersible and evaporable upon application of an energy above a threshold value and an electrical property-imparting thin film singly not easily dispersible, being dispersible in the form of said laminate by said energy application and capable of providing a conductor film, said dispersion-metal thin film having a thickness between 100 and 5000 Å and being formed of a member selected from the group consisting of Bi, Te, Ni, Cu, Sn, In, Pb, Zn, Se, Ge, Co, Fe, Ti, Sb, Al, Cd, and alloys thereof, said electrical property-imparting film having a thickness of between 50 and 5000 Å, and being formed of a member selected from the group consisting of Ag, Au, Pt, Ru, Rh, Pd, Os, Ir, Ir_2, O_3 and SnO_2;

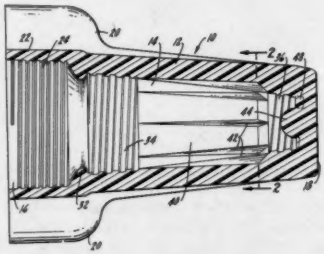
said thin-film laminate being patterned in a desired circuit form by the dispersion thereof by the application of an energy above a threshold value.

4,227,040

SCREW-ON ELECTRICAL CONNECTOR

William J. Scott, Sycamore, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.

Filed Apr. 9, 1979, Ser. No. 28,056
Int. Cl.² H01R *5/12*
U.S. Cl. 174—87 **33 Claims**



1. In an electrical connector of the screw-on type for joining the ends of two or more electric wires, a cap of stiffly flexible insulating material having a generally central bore open at one end and enclosed at the other end by an integral end wall, a generally tapered wire coil in the bore, the outer end of the coil being toward the open end of the cap and in engagement with an outer area on the inner surface of the central bore, the inner end of the coil being in engagement with an inner area on the inner surface of the central bore adjacent the end wall, and a central area in the bore between the inner and outer areas

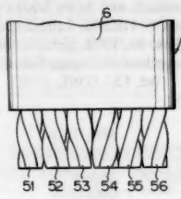
engaging the coil in its free state and having less resistance to expansion of the coil than that of the outer area.

4,227,041

FLAT TYPE FEEDER CABLE

Hiroshi Den; Masao Shimizu, both of Chiba, and Yoshioki Shingo, Shizuoka, all of Japan, assignors to Fujikura Cable Works, Ltd., Tokyo, Japan

Filed Nov. 16, 1978, Ser. No. 961,093
Claims priority, application Japan, May 23, 1978, 53-61311
Int. Cl.[2] H01B 7/08
U.S. Cl. 174—117 F 14 Claims



1. A flat type feeder cable useful for supplying electricity to an elevator comprising an even number of at least four stranded conductors with their respective axes arranged in a line and in a substantially coplanar relationship and an outer jacket made of a flexible material completely covering the stranded conductors, each of said stranded conductors being composed of a plurality of insulated cores stranded together, and wherein an equal number of the stranded conductors are disposed in a positionally symmetrical relationship with respect to the lateral axis of symmetry on a cross section of the cable, the direction of lay of each of half the number of stranded conductors is right-hand while the direction of lay of each of the remaining stranded conductors is left-hand, and each of the plurality of insulated cores constituting each stranded conductor has one twist per one pitch of the stranding of the stranded conductor, said twist having the same direction as the direction of the stranding of the stranded conductor.

4,227,042

TELEPHONE CORDS

Donald E. Lueddecke, St. Charles, Mo.; John J. Mottine, Jr., Red Bank Township, Monmouth County, N.J., and William C. Vesperman, Bel Air, Md., assignors to Western Electric Inc., New York, N.Y. and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 7, 1978, Ser. No. 967,550
Int. Cl.[2] H01B 7/06, 7/02
U.S. Cl. 174—120 SR 19 Claims

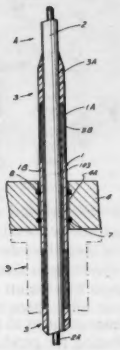
1. An electrical cord having a plasticized polyvinyl chloride jacket and at least one conductor surrounded thereby wherein said jacket has a coating thereon, said coating resulting from drying of a coating formulation comprising a binder having from (a) 75–90 weight percent of a medium molecular weight copolymer of methyl methacrylate and ethylhexylacrylate, (b) 5–15 weight percent cellulose acetate butyrate and (c) 5–10 weight percent carbalkoxy benzyl phthalate plasticizer.

4,227,043

SEALING DEVICE FOR PORTIONS OF ELECTRIC CABLES IN THE HOLES OF HOUSINGS OF ELECTRIC MOTORS OR THE LIKE

Heinz Stöhr; Gerhard Kuntz, both of Bad Homburg, and Gerhard Scheer, Namborn, all of Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Filed Jun. 22, 1978, Ser. No. 918,163
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1977, 2730675
Int. Cl.[2] H02G 3/22; H01B 17/30
U.S. Cl. 174—151 10 Claims



1. In combination, a wall member having a hole extending therethrough, an electric cable having a sheath extending through said hole, and a sealing device sealing the cable at the hole and comprising, an elongated sleeve surrounding said cable sheath and extending through said hole, said elongated sleeve including a median portion having a first outer diameter and extending through the hole, and two opposite end portions having smaller second outer diameters; means sealing the interface between said median portion of said sleeve and the surface of the wall member which bounds the hole; and a pair of tubular insulating portions, each sealingly surrounding one end portion of said sleeve and the adjacent portion of the cable sheath and each having an outer diameter which is at most equal to said first outer diameter so that either of said insulating portions can pass through the hole and past said sealing means as the sealing device is introduced into and withdrawn from the hole.

4,227,044

PEN STATUS SYSTEM FOR DIGITIZER PEN

George A. Fencl, Phoenix, Ariz., assignor to Talos Systems, Inc., Scottsdale, Ariz.

Filed Jan. 22, 1979, Ser. No. 5,195
Int. Cl.[3] G08C 21/00
U.S. Cl. 178—19 10 Claims

1. In a digitizer, a pen status indicating system for indicating whether a writing tip of a pen is pressed against a writing surface, said pen status indicating system comprising in combination:

a. a housing for said pen;

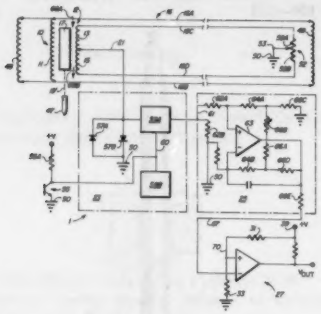
b. a pen cartridge including a writing tip and a reservoir containing writing fluid;

c. resilient means for resiliently resisting movement of said writing tip toward said housing and urging said writing tip toward said writing surface;

d. inductive means having first and second series connected windings and a center tap for producing an AC pen status signal on said center tap, said inductive means including a movable core connected in substantially fixed relationship to said writing tip;

e. signal applying means for applying a first AC signal to said inductive means, said signal applying means also applying said AC signal to a pen coil to effect transmission of an electromagnetic signal for reception by grid conductors of said digitizer;

f. connecting means for connecting the end of said reservoir to said movable core, causing said movable core to occupy a first position when said writing tip is pressed against said writing surface and a second position when said writing tip is moved away from said writing surface; and



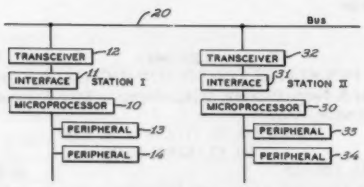
g. sensing circuit means coupled to said intermediate tap of said secondary winding for producing a pen status logic signal indicating whether said movable core is in said first position or said second position, wherein said sensing circuit means includes a phase sensitive detector circuit for detecting and producing an output signal which is a positive signal when said movable core is in one of said positions and a negative signal when said movable core is in the other of said positions.

4,227,045

DATA PROCESSING PROTOCOL SYSTEM

Darrell Chelcun, Boling Brook, and Lawrence J. Dressel, Bartlett, both of Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 28, 1978, Ser. No. 919,871
Int. Cl.[2] H03K *13/24*
U.S. Cl. 178—66.1 **24 Claims**



1. A transceiver circuit for connecting a data processing unit to a communication bus, said data processing unit capable of transmitting, receiving and processing non-return to zero signals having a normal first level and assuming a second level to indicate a data bit and said communication bus capable of transmitting pulses to communicate a data bit, said transceiver circuit comprising:

an input connected to said data processing unit for receiving non-return to zero signals to be transmitted;

triggering means connected to said input and responsive to an edge of a non-return to zero signal to be transmitted to begin supplying triggering pulses having a predetermined frequency;

gate means connected to both said triggering means and said input for passing said triggering pulses through as long as said non-return to zero signals to be transmitted are at their second level;

pulse-no pulse means connected to said gate means and responsive to said triggering pulses for supplying said pulses to said communication bus;

receive means connected to said communication bus for receiving pulses from said communication bus and converting them to non-return to zero signals to be processed; and,

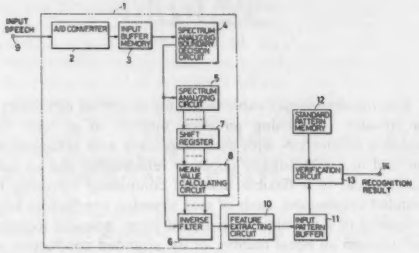
means connected to said receive means and to said data processing unit for transmitting said non-return to zero signals to be processed to said data processing means.

4,227,046

PRE-PROCESSING SYSTEM FOR SPEECH RECOGNITION

Akira Nakajima, Kodaira, and Akira Ichikawa, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 24, 1978, Ser. No. 880,951
Claims priority, application Japan, Feb. 25, 1977, 52-19240
Int. Cl.[2] G10L *1/00*
U.S. Cl. 179—1 SD **11 Claims**



1. A pre-processing system for speech recognition comprising:

first means for receiving input speech which has been transmitted through a transmission medium, said first means providing an output representative of said input speech;

second means connected to the output of said first means for determining the mean frequency spectrum of the input speech received by said first means and providing an output representative of said mean frequency spectrum; and

filter means, connected to the outputs of said first and seconds means, having a frequency spectrum response inversely proportional to the mean frequency spectrum determined by said second means, for filtering the input signal received by said first means.

4,227,047

DOME STRUCTURE

Edward A. Horne, 231 Western Blvd., Jacksonville, N.C. 28540

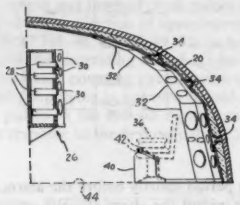
Filed Jul. 21, 1978, Ser. No. 926,738
Int. Cl.[2] H04R *5/02*; E04B *1/32*
U.S. Cl. 179—1 E **4 Claims**

1. An audition booth for stereo components adapted to be portably erected in a room having at least one corner formed by intersecting walls and a floor, comprising:

(a) at least two dome sections having arcuate outer walls and means for mounting a plurality of audio components on their inner walls, said at least two dome sections having base portions supported on said floor and side walls which taper to a tip for support by said corner of the room, one side wall of one of said sections abutting against a side wall of another of said sections and the tip portions of said

sections meeting at a common point so as to form a continuous partial dome;

(b) at least one seat positioned within said partial dome and under the inner wall thereof for holding a listener; and



(c) control console means positioned adjacent said seat for permitting said listener to select various combinations of said audio components for auditioning purposes.

4,227,048

AUDIO SIGNAL TRANSMISSION CIRCUIT HAVING A CONSTANT LEVEL TONE-CONTROLLED OUTPUT SIGNAL

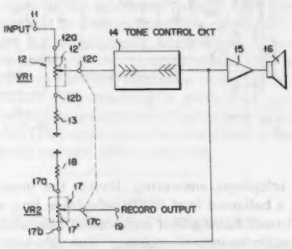
Yuuichi Nagata, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Sep. 21, 1978, Ser. No. 944,589

Claims priority, application Japan, Sep. 22, 1977, 52-128157[U]

Int. Cl.[2] H03G *5/00*

U.S. Cl. 179—1 D **9 Claims**



1. An audio signal transmission circuit comprising:

an input terminal for receiving an audio input signal;

a first output terminal for delivering a first output signal;

a second output terminal for delivering a second output signal;

a tone control circuit having an output which is coupled to said first output terminal, said tone control circuit supplying a tone controlled signal at its output;

first variable attenuating means connected between said input terminal and the input of said tone control circuit, the output of said first variable attenuating means having a variable signal level; and

second variable attenuating means connected between the output of said tone control circuit and said second output terminal for supplying a tone controlled output signal of said tone control circuit to said second output terminal, said first and second attenuating means being interlocked and so designed that the sum of their attenuating factors is substantially constant irrespective of any attenuating operation of said first and second variable attenuating means so that the tone controlled signal at said second output terminal has a substantially constant level.

4,227,049

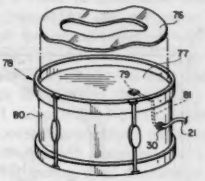
AUDIO SYSTEM FOR ISOLATING SOUNDS FROM INDIVIDUAL COMPONENTS OF DRUM SET-UP FOR SELECTIVELY MIXING

Ian W. Thomson, 151 Miramontes Rd., Woodside, Calif. 94062; Charles D. Limbaugh, 552 Culp Ave., Hayward, Calif. 94544, and JoEllen Burch, 553 63rd St., Oakland, Calif. 94609

Filed Nov. 27, 1978, Ser. No. 963,821

Int. Cl.[3] G01H *1/00*

U.S. Cl. 179—1 M **7 Claims**



7. In a sound system for isolating the individual sounds of the components of a drummer's set-up having cymbals and drums, transducers carried by dynamic impact portions of said components, transmission channels respectively associated with said transducers for carrying transduced signals for reproduction, and means carried by said portions for damping the sound from same.

4,227,050

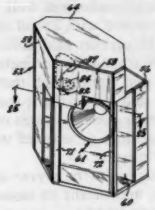
VIRTUAL SOUND SOURCE SYSTEM

Bernard T. Wilson, 15847 SW. Springbrook Ct., Lake Oswego, Oreg. 97034

Filed Jan. 11, 1979, Ser. No. 2,541

Int. Cl.[2] H04R *5/02, 1/02*

U.S. Cl. 179—1 GA **15 Claims**



1. A system for generating binaural sound in a rectangular room from a stereo recording made of a live performance, said room having a front wall, sidewalls and a ceiling, said system comprising:

a low frequency range loudspeaker means;

a high frequency range loudspeaker means;

said low frequency range loudspeaker means disposed to radiate energy therefrom rearwardly and sidewardly so as to reflect off the front wall, sidewalls and ceiling of the room whereby upon advancing into the listening room it converges upon the listening area thereof; and

dispersing means including a portion of a parabaloid of revolution having a reflective surface;

said high frequency range loudspeaker means disposed generally at the focus of the parabaloid of revolution to radiate energy therefrom upwardly to reflect off the reflective surface thereof such that said high frequency range energy is divergingly dispersed forwardly by said dispersing means over a horizontal and vertical angular range whereby upon advancing into the listening room it reflects

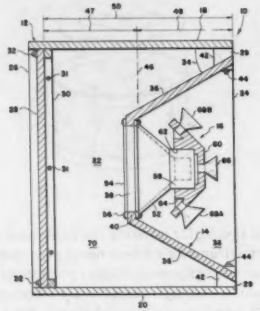
off the sidewalls and ceiling of the room and converges upon the listening area thereof.

4,227,051

LOUD SPEAKER AND ENCLOSURE SYSTEM

Wayne W. Thomas, and Walter C. Thomas, both of 301 Choctaw, Tahlequah, Okla. 74464

Filed Feb. 26, 1979, Ser. No. 14,908
Int. Cl.[2] H04R *1/28*; H04M *1/00*; H05K *5/00*
U.S. Cl. 179—1 E **15 Claims**



1. A loud speaker assembly and enclosure system, comprising;

(a) a three dimensional frame enclosing a volume of selected shape, and having an open front and back; said frame, made of substantially rigid material;

(b) means to enclose said back of said frame with a planar sheet of foamed material of selected composition and thickness, attached to said frame;

(c) a truncated tapering horn, of overall dimension across the large end, a selected dimension less than the internal dimension of said frame; said horn made of foamed material of selected composition and wall thickness; and small end of said horn closed with a wall of said foamed material; and means to support said horn to said frame at a plurality of points around the perimeter of said horn, near the front end of said frame, such that when said horn is positioned inside said frame, the space between said horn and said back closure communicates with the front of said frame through openings of selected width over at least a portion of its perimeter;

(d) a circular opening in the transverse wall across the small end of said horn, and means to mount a large diameter cone speaker, inside said horn, across said circular opening, facing to the back of said frame; and

(e) means to mount at least one high frequency speaker, inside said horn, facing toward the front of said frame.

4,227,052

METHOD AND MEANS FOR REDUCING FALSE ALARM RATES IN SECURITY SYSTEMS

Leonard R. Kahn, 70 N. Grove St., Freeport, N.Y. 11520

Filed May 18, 1978, Ser. No. 907,398
Int. Cl.[3] H04M *11/04*
U.S. Cl. 179—5 P **10 Claims**

1. A security system comprising;

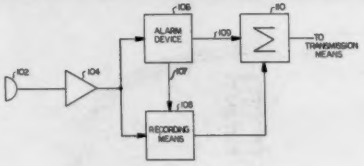
(a) a first transducer,

(b) an alarm detector fed by the output of the transducer,

(c) means for transmitting the alarm information to a remote site, including automatic dial equipment controlled by the alarm detector and connected to a telephone line, said transmitting means further including means to cause distant telephone receiving equipment to be activated and means for transmitting information as to the location of the (a) transducer,

(d) a second transducer located in close proximity to the first transducer, and,

(e) recording means fed by the second transducer, said recording means controlled to record sounds that occur at



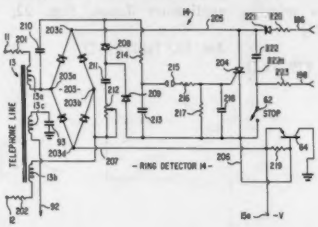
least for a period shortly before the alarm detector operates to the instant the alarm actually operates and which plays back said sounds to said remote site in response to the activation of said telephone receiving equipment for use in ascertaining the validity of the alarm.

4,227,053

TELEPHONE ANSWERING DEVICE HAVING BALANCED INPUT

Sava Jacobson, 8130 Orion St., Van Nuys, Calif. 91406

Division of Ser. No. 941,282, Sep. 11, 1978, which is a division of Ser. No. 879,279, Feb. 21, 1978. This application Feb. 21, 1979, Ser. No. 13,045
Int. Cl.[3] H04M *1/64*
U.S. Cl. 179—6 R **8 Claims**



5. In a telephone answering device, the improvement for providing a balanced load to the telephone line, comprising:

a transformer having first and second like windings,

a solid state switch connecting one terminal of said first winding to one terminal of said second winding, said switch being turned on in response to ring detection,

the other terminal of each of said first and second windings being connected in dc circuit to a respective opposite side of said telephone line, so that when said switch is off, each transformer winding presents a like impedance to ground to each respective side of said telephone line, and when said switch is on, said first and second windings are in dc circuit across said telephone line so as to provide a load for seizure thereof while still providing a balanced impedance to ground.

4,227,054

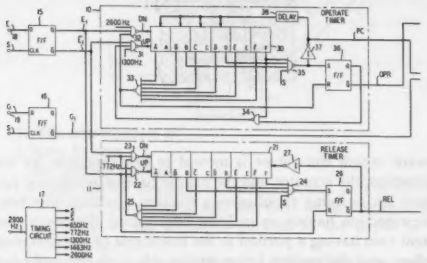
DIGITAL CONSTANT-PERCENT BREAK PULSE CORRECTOR

John L. Gilmer, Falls Church, Va., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 1, 1978, Ser. No. 965,471
Int. Cl.[2] H04Q *1/36*
U.S. Cl. 179—16 EA **8 Claims**

1. A constant-percent break pulse corrector (FIGS. 1 and 2) of the type including a source (17) of first clock pulses having a predetermined first frequency selected in relationship to a minimum incoming pulse rate, a source (17) of second clock

pulses having a predetermined second frequency selected in relationship to a maximum incoming pulse rate, an operate timer (**10**) including an up/down counter (**30**) for generating a first output in response to reception of an incoming pulse for more than a prescribed interval, a make timer (**44, 45, 50, 51**) including a first digital counter (**44**) and being jointly responsive to the first output and the first clock pulses for generating a second output at the termination of a predetermined counting cycle, a break timer (**43, 46, 47, 48, 49, 52**) including a second digital counter (**43**) for generating a third output upon termination of a predetermined counting cycle, means (**20, 40, 41, 46, 47, 48**) for initially supplying in response to said second output the first clock pulses to the second digital counter (**43**) and subsequently in response to the first output (PC) supplying the



second clock pulses to the second counter (**43**) for an interval terminated by generation of the third output, and means (**41**) responsive to the second and third outputs for generating an output pulse chain (MAKE), characterized by

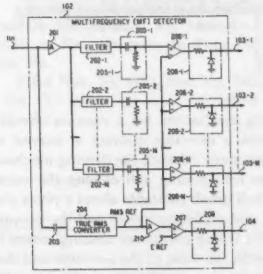
control means (**33** through **38**) in circuit with the operate timer (**10**) up/down counter (**30**) for controllably changing the count of the up/down counter (**30**) from a first maximum count to a second count in response to the first output and for subsequently controllably changing the count attainable of the operate timer (**10**) up/down counter (**30**) to the first maximum count upon the up/down counter (**30**) reaching a prescribed count state thereby inhibiting generation of subsequent ones of said first outputs (PC) until after the prescribed count state of the up/down counter (**30**) is attained.

4,227,055

MULTIFREQUENCY RECEIVER

Robert L. Hanson, Howell Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 7, 1978, Ser. No. 967,272
Int. Cl.[2] H04M *1/50*
U.S. Cl. 179—84 VF **12 Claims**



1. Apparatus (FIG. **1**) supplied with an incoming received signal (via **101**) for detecting reception of multifrequency signals of the type including a plurality of filters (FIG. **2**, **202-1** through **202-N**) for passing individual multifrequency tones and a plurality of comparators (FIG. **2**, **206-1** through **206-N**) connected on a one-to-one basis with the plurality of filters (**202-1** through **202-N**) for generating pulse signal outputs (at **103-1** through **103-N**) representative of individual multifrequency tones which exceed a reference threshold level supplied to the comparators, CHARACTERIZED BY,

means (FIG. **2**, **204**) responsive to the incoming signal for dynamically generating a reference threshold level (RMS REF) having a value in prescribed relationship to the input signal (from **101**), said reference threshold level being supplied to the plurality of comparators (**206-1** through **206-N**), and

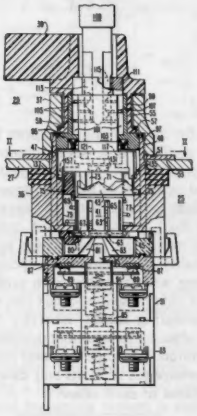
means (FIG. **1**, **105**) supplied with the output pulse signals (**103-1** through **103-N**) from the plurality of comparators (FIG. **2**, **206-1** through **206-N**) for evaluating the interval each of the comparator output pulse signals is present during a predetermined sampling interval to determine whether corresponding valid multifrequency tones have been received.

4,227,056

KEY LOCK ROTARY SELECTOR SWITCH

Robert J. Johnston, Beaver Falls; Stephen G. Layciak, Brighton Township, Beaver County, and Dominic Colista, Harmony Township, Beaver County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 12, 1979, Ser. No. 29,515
Int. Cl.[3] H01H *9/28*
U.S. Cl. 200—44 **5 Claims**



1. A key lock rotary selector switch comprising a switch structure and a rotatable operating unit; the switch structure having a reciprocable contact operating member to effect opening and closing of a circuit through the switch; the unit including a tubular housing, an actuator within the housing and being operable against the operating member, a handle operatively connected to the actuator, connecting means for connecting the handle to the actuator and including a bushing fixedly mounted within the housing, a lock plug rotatably mounted within the bushing, interlock means between the lock plug and the actuator for interchangeably positioning the plug and actuator and comprising an adaptor, the plug and adaptor having detachable first interfitting means for rotating the handle through one limited sector thereof, the actuator and the adaptor having detachable second interfitting means for rotating the actuator through one limited sector thereof, the first and second interfitting means being repositionable for rotation

of the handle and actuator through other limited sectors; the lock plug having a key actuated contractable latch laterally movable in response to movement of a key; and the bushing having peripherally spaced opening means for receiving the latch, whereby the handle is locked in place when a key is removed from the lock plug.

4,227,057

APPARATUS FOR ASCERTAINING THE UPPER LEVEL OF LIQUIDS IN TANKS OR THE LIKE

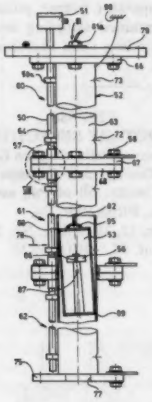
Wolfgang Kübler, Industriestrasse 31,, CH-6300 Zug, Switzerland

Filed Apr. 3, 1979, Ser. No. 26,671

Claims priority, application Switzerland, Apr. 13, 1978, 3981784/78

Int. Cl.[2] H01H *35/18*

U.S. Cl. 200—84 C **14 Claims**



1. Apparatus for ascertaining the upper level of a supply of liquid which is confined in a vessel, comprising an elongated conduit which is permeable to liquids and is installed in said vessel in upright position so that the upper level of liquid in said conduit at least approximates the upper level of said supply of liquid; a float disposed in said conduit and including switch actuating means; an upright pipe adjacent to said conduit; and a plurality of electrical components sealingly confined in and being withdrawable from said pipe, said components including a row of spaced-apart electric switches actuatable by said actuating means whereby the actuation of a switch which is adjacent to said float denotes the upper level of liquid in said conduit, said pipe and said conduit comprising a plurality of superimposed sections and means for coupling the neighboring sections to each other.

4,227,058

TURN-START PUSH-STOP SWITCH OPERATOR

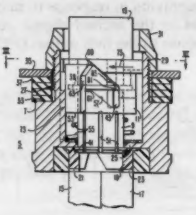
Robert J. Johnston, Beaver Falls; Stephen G. Layciak, Beaver, and Dominic Colista, Ambridge, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 29, 1979, Ser. No. 25,178

Int. Cl.[2] H01H *9/20, 3/08*

U.S. Cl. 200—153 J **5 Claims**

1. A turn-push switch operator comprising a tubular housing, stationary and movable contact operating means including a reciprocable plunger, a manual operator, actuator means for actuating the plunger to effect opening and closing of the contacts and comprising an actuator and a manual handle, the actuator including a detent and being rotatably mounted within the housing, a detent cam operatively connected to the detent, the detent cam being movable longitudinally only within the housing and being spring-biased against the detent, the cam having a camming surface inclined to the longitudinal axis of the housing, the detent being movable on the camming surface to effect rotation of the actuation, stop surface means at each end of the camming surface, the manual operator being movable rotatably and longitudinally of the detent cam and comprising a projection extending toward the detent cam, the projection having a detent-engaging surface for moving the detent over the camming surface in one direction thereof, the camming surface having a detent-receiving notch at the end



toward which the detent is moved in one direction by the projection, the actuator and the handle having interfitting key means for enabling simultaneous rotation in either direction, the projection having an inclined edge facing the notch, the detent cam having a portion at the notch end of the camming surface, and the portion being engageable with the inclined edge when the detent is in the notch to effect the rotation of the handle in the other direction when the handle is pushed toward the detent cam.

4,227,059

DRIVING MECHANISMS FOR VACUUM CIRCUIT BREAKERS

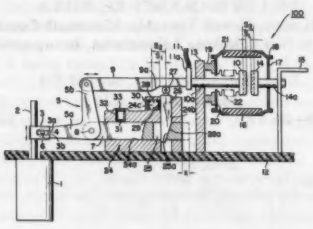
Seishi Ogawa, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Jun. 13, 1979, Ser. No. 48,233

Claims priority, application Japan, Jun. 19, 1978, 53-73910

Int. Cl.[2] H01H *3/00, 35/24, 1/50*

U.S. Cl. 200—153 G **12 Claims**



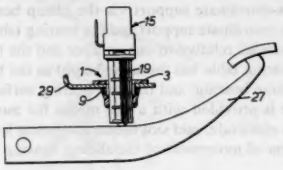
1. In a driving mechanism for a vacuum circuit breaker of the type wherein a movable contact is moved toward and away from a stationary contact, the driving mechanism having actuating means for opening and closing the vacuum circuit breaker, and a bell crank rotatable about a pivot pin and interposed between said actuating means and the movable contact, the improvement which comprises shifting means for shifting, in accordance with the wear of the movable and the stationary contacts, the pivot pin of said bell crank in parallel with the axis of the movable contact to correct the retracted position of the movable contact, to compensate for the wear of the movable and the stationary contacts.

4,227,060

LOCATING MEANS FOR AN ELECTRIC SWITCH

Frederick C. Ayres, Cheltenham, and Philip V. Little, Stroud, both of England, assignors to Bonnella Switches Limited, Cheltenham, England

Filed May 29, 1979, Ser. No. 43,249
Claims priority, application United Kingdom, May 30, 1978, 23963/78; May 31, 1978, 25154/78
Int. Cl.[3] H01H 13/18
U.S. Cl. 200—296 10 Claims



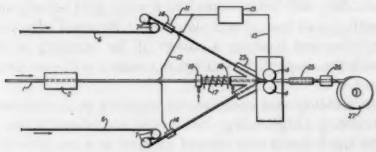
1. The combination of
a body having
an opening therein,
a plurality of members extending around part of the side wall of the opening, said members being arranged side-by-side in the direction parallel to the depth of the opening, and
a projection projecting from the side wall into the opening and
a switch carrier having
an elongate portion,
a plurality of members extending around part of the side wall of the elongate portion, said members being arranged side-by-side in the direction parallel to the length of the elongate portion and
a projection projecting outwardly from the side wall of the elongate portion,
the opening in the body and the elongate portion of the switch carrier being such that the elongate portion is insertable in the direction of its length into the opening and by causing limited relative rotation between the elongate portion of the carrier and the body in a first direction members on the body and members on the carrier mate together to axially locate the carrier in the body and the projections being such that said relative rotation in the first direction cause them to take up relative positions which prevent relative rotation between the body and the elongate portion in the opposite direction unless the applied force to bring about relative rotation in said opposite direction is sufficient to deform one or both of the projections.

4,227,061

METHOD AND APPARATUS FOR CLADDING A METAL ROD WITH ANOTHER METAL

Lee R. Westfall, McKeesport, and Malcolm J. Fraser, Pittsburgh, both of Pa., assignors to Copperweld Corporation, Pittsburgh, Pa.

Filed Nov. 19, 1976, Ser. No. 743,459
Int. Cl.[3] B23K 13/00, 11/00; H05B 6/02
U.S. Cl. 219—9.5 2 Claims



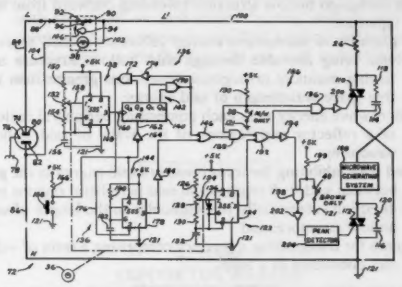
1. A method of cladding a metal rod with a dissimilar metal to form a product not subject to hot tearing, comprising continuously feeding the rod forward, continuously feeding metal cladding strips toward the rod for engagement with it, the strips having a different electrical resistance than the rod, passing electric current through a predetermined length of the strips to heat them by electrical resistance to a solid-phase bonding temperature before they engage the rod, simultaneously heating the rod to a solid-phase bonding temperature by electrical induction in a predetermined area before engagement by the strips, maintaining the surface of the heated portion of the rod substantially free from oxide before engagement by the strips, then substantially enclosing the heated rod with the heated strips to form a substantially circular composite, and pressing the heated strips against the heated rod with enough force to reduce the diameter of the composite and simultaneously solid-phase bond the strips and rod together.

4,227,062

OPTIMUM TIME RATIO CONTROL SYSTEM FOR MICROWAVE OVEN INCLUDING FOOD SURFACE BROWNING CAPABILITY

Thomas R. Payne, and Bohdan Hurko, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed May 31, 1978, Ser. No. 911,614
Int. Cl.[3] H05B 6/68; H02J 3/14
U.S. Cl. 219—10.55 B 19 Claims



1. In a cooking oven having a cooking cavity, an electrical resistance food browning system positioned within the cavity so as to brown by radiant energy the surface of food being cooked therein, and a microwave energy generating system supplying the cooking cavity, an optimized time ratio control system comprising:
output means connected to energize either the microwave energy generating system or the electrical resistance food browning system;
timing means controlling said output means and effective to establish successive time share cycles, each time share cycle including a long browner ON time interval during which the food browning system is energized, and each time share cycle further including an alternating interval which in turn includes a plurality of alternating short microwave ON time sub-intervals and short browner ON time sub-intervals during which the microwave generating system and the food browning system, respectively, are alternately energized; and
each long browner ON time interval having at least a predetermined minimum duration selected to allow the browning system time to reach at least a minimum effective temperature for browning of the surface of the food by infrared radiant energy;
whereby during the long browner ON time intervals the electrical resistance food browning system is raised to at least an effective temperature, and during the alternating intervals energy is supplied to the food browning system so as to keep the food browning system warm and energy is supplied to the microwave energy generating system in relatively frequent pulses.

4,227,063

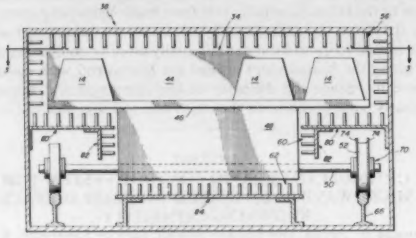
MICROWAVE APPARATUS SEAL

Richard H. Edgar, Chelmsford; E. Eugene Eves, II, Nabnasset, and Charles L. Gilliatt, Andover, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jan. 25, 1978, Ser. No. 872,189

Int. Cl.[2] H05B *9/06*

U.S. Cl. 219—10.55 A **5 Claims**



1. In combination:

A conductive enclosure energized with microwave energy and having at least one access aperture;

an elongated hollow structure extending outward from said aperture;

a plurality of microwave energy reflectors spaced apart in and being movable through said hollow structure and having mutually orthogonal dimensions greater than the free space wavelength of said energy;

microwave energy seals each comprising peripheral regions of a reflector and regions of the walls of said hollow structure;

said seals inhibiting the transmission of said energy in the gap between said wall regions and said peripheral regions in a direction substantially perpendicular to the length of said hollow structure; and

means for transporting a product comprising a train of vehicles connected in a loop.

4,227,064

DEVICE FOR ADVANCING A WORKPIECE IN ELECTRO-EROSIVE PROCESSING BY A WIRE-LIKE ELECTRODE

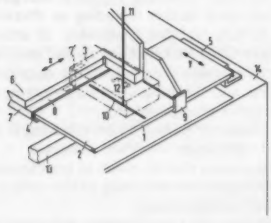
Harry Muegge, and Klaus-Peter Steil, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 11, 1978, Ser. No. 968,171

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1977, 2755724

Int. Cl.[2] B23P *1/12*

U.S. Cl. 219—69 W **9 Claims**



1. A device for advancing a workpiece in an electroerosive processing by a wire-like electrode which is threaded into a starting bore in the workpiece and is drawn through by a drive and guide system and wherein a path of the relative movements between the workpiece and the electrode is controlled by means of an electric control system, comprising: a base; means for fixing a portion of the workpiece which is not to be processed to a cross-coordinate support which can be moved in all lateral directions by use of an attached clamp bearing having a bearing surface on which the workpiece rests; a bearing table having two sliding bearings, one for advance in each of two orthogonal coordinate directions; a portion of the workpiece which is to be processed resting on a bearing surface of the bearing table; one of said sliding bearings being secured to the base and the other sliding bearing connected to the cross-coordinate support via the clamp bearing such that the cross-coordinate support and the bearing table are displaceable in parallel relative to one another and the bearing surface of the bearing table has the same height as the bearing surface of the clamp bearing; and that the bearing surface of the bearing table is provided with a slot means for movement of the wire-like electrode, said slot means extending longitudinally in a direction of movement of the sliding bearing secured to the base.

4,227,065

METHOD OF JOINING CURRENT CONDUCTING COMPONENTS OF WAVE GUIDE ELEMENTS AND PRODUCING OF THE SAME

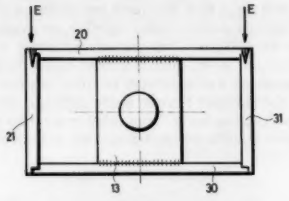
Laszlo Paradi; Miklos Acs; Tibor Sziics, and Tibor Konkoly, all of Budapest, Hungary, assignors to Finommechanikai Vallalat, Budapest, Hungary

Filed Sep. 29, 1977, Ser. No. 837,883

Claims priority, application Hungary, Sep. 30, 1976, PA 1263

Int. Cl.[2] B23K *9/00*

U.S. Cl. 219—121 EM **8 Claims**



1. A method of making a wave guide which comprises the steps of:

forming a plurality of components adapted collectively to constitute a wave guide element and including at least two sheet metal plates formed with electroplated high-conductivity coatings adapted to form a current-conducting surface of the wave guide element the plates having sheet metal sides turned away from said coatings;

assembling said components into a wave-guide configuration with at least two of said plates being disposed adjacent one another and forming a corner of the resulting assembly with the respective coatings in contact with one another; and

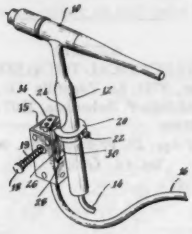
beam welding said components together at said corner by directing a high energy beam onto one of said plates from the sheet metal side thereof to form at a location spaced outwardly from the region in which said coatings contact a melting pool bridging said plates and thereby welding the same together.

4,227,066

HAND-OPERATED REMOTE CONTROL UNIT AND MOUNTING STRUCTURE FOR AN ARC WELDING MACHINE

Bulwidas, Jr., John J., Jeremiah Rd. - R.D. #3, Sandy Hook, Conn. 06482

Filed Feb. 12, 1979, Ser. No. 11,314
Int. Cl.[3] B23K *9/10*
U.S. Cl. 219—132 **5 Claims**



1. A hand-operated remote control unit and mounting structure for an electric welding torch comprising:

(a) a rotary potentiometer having a rotatable shaft extending therefrom,

(b) a pinion mounted on said rotatable shaft,

(c) a rack having said pinion coupled thereto,

(d) a switch element coupled to said rotatable shaft which normally is in an off-position being activated to an on-position when said rotatable shaft is activated,

(e) a spring loaded push button attached to said rack adapted to be actuated by a digit of the hand of the user for linearly moving said rack thereby rotating said pinion and said shaft for operating said switch element to an on-position and varying the resistance of said potentiometer,

(f) a rectangular housing having said potentiometer, said rack and pinion, and said switch elements mounted therein with said spring loaded push button extending therefrom, and

(g) mounting means on said housing for holding an electric welding torch, said mounting means including a holder mounted on said housing, and an adjustable ring-shaped clamp adapted to adjustably hold the handle of an electric welding torch, said adjustable clamp being held in said holder.

4,227,067

HEATER ADAPTER FOR MAKING POLYETHYLENE PIPE CONNECTIONS

Arthur H. McElroy, P.O. Box 15580, Tulsa, Okla. 74115

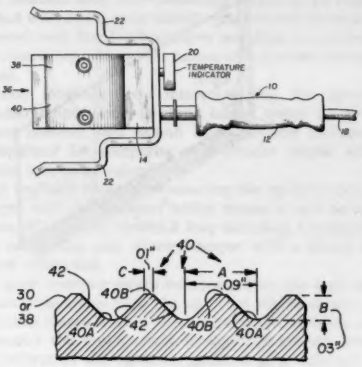
Continuation-in-part of Ser. No. 650,189, Jan. 19, 1976, abandoned. This application Apr. 5, 1978, Ser. No. 893,675
Int. Cl.[2] H05B *1/00*; B32B *31/20*
U.S. Cl. 219—243 **16 Claims**

1. A platen for simultaneously heating a first portion of a first thermoplastic thick-walled element and a first portion of a second thick-walled thermoplastic element in a process for heat fusion bonding together said two heated portions of said elements, and in which the depth of the heat metled first portions of said elements is greater than is possible with conventional heating devices, comprising;

(a) a platen base having heating means for heating the base;

(b) said platen having first and second opposed heating surfaces, said first surface configured to approximately match said first portion of said first element, said second surface configured to approximately match said first portion of said second element, said heating surfaces being heated by said heating means to a selected temperature sufficient to heat melt said first portions of said themoplastic elements;

(c) ridge and groove means to provide over the full extent of said first and second heating surfaces increased surface thermal contact area between said heating surfaces and the corresponding portions of said elements; and wherein



(d) the ridges on said first heating surface being in alignment with the ridges on said second heating surface, and the corresponding grooves on said first, heating surface being in alignment with the grooves on said second heating surface.

4,227,068

CONVECTOR HEATER

Brian Carter, Paris, France, assignor to Societe PRL, Aubervilliers, France

Continuation-in-part of Ser. No. 924,091, Jul. 12, 1978, abandoned, which is a continuation of Ser. No. 770,760, Feb. 12, 1977, abandoned. This application Jul. 14, 1978, Ser. No. 924,832
Claims priority, application United Kingdom, Feb. 20, 1976, 6880/76
Int. Cl.[3] F24H *3/00*
U.S. Cl. 219—366 **17 Claims**

1. A convector heater for mounting cnto a wall, said heater comprising:

heat exchanger means for producing heat;

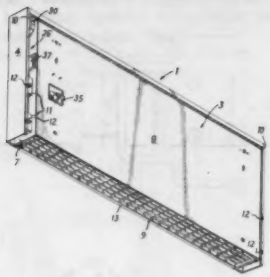
cabinet means surrounding said heat exchanger means for housing said heat exchanger means therein, said cabinet means comprised of:

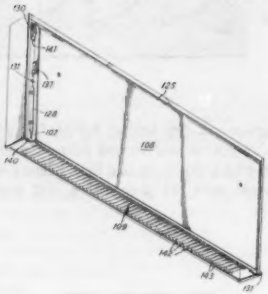
a front cabinet having front, side and top portions respectively surrounding the front, sides, and top of said heat exchanger means; and

a rear cabinet having rear, bottom and side portions respectively surrounding the rear and bottom and at least part of the sides of said heat exchanger means, said side portions of said rear cabinet being in planes spaced inwardly from planes of said side portions of said front cabinet, and said side portions of said rear cabinet extending rearwardly beyond the rear edge of said front side portions, whereby a rebate is formed on each side of said cabinet means by said inward spacing and said rearward extent of said side portions of said rear cabinet;

control means in one of said rebates and connected to said

heat exchanger means for controlling the heat produced by said heat exchanger means; and





mounting means connected to said rear cabinet for mounting said cabinet means onto a wall.

4,227,069

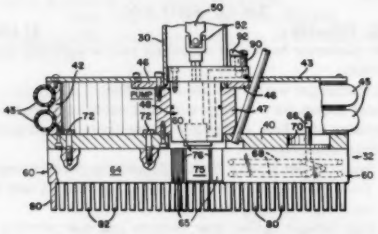
HOT MELT DISPENSER

James J. Gardner, and Hugh P. Koppehele, both of Hamilton, Ohio, assignors to Nordson Corporation, Amherst, Ohio

Continuation-in-part of Ser. No. 755,974, Dec. 30, 1976, abandoned. This application Apr. 20, 1978, Ser. No. 898,481

Int. Cl.[2] B67D *5/62*; H05B *3/78*

U.S. Cl. 219—421 **5 Claims**



2. In hot melt pumping and dispensing apparatus in which a platen carrying a pump and a plastic material heater is arranged to be lowered into a barrel of hot melt plastic material for melting and dispensing the same from the barrel, the improvement in heater construction comprising a plurality of individual sector-shaped heater segments arranged in a circle on the lower face of said platen and defining a central space at a common apex thereof in communication with said pump, each of said heater segments having a non-perforated heater body of heat conducting material, a heater element embedded in said body, and a plurality of integral depending heat conducting projections formed integrally with the lower face of said body and extending downwardly therefrom and terminating substantially at a common plane, said projections being proportioned to extend into said material in advance of said body to preheat and soften said material for liquefaction by said body, and said segments being spaced from each other to define radial flow passages between adjacent said segments and opening into said space for delivery of heated material thereinto.

4,227,070

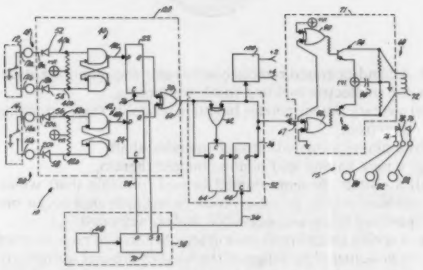
ELECTRICAL TOTALIZER

Thomas E. Baker, 9781 La Zapatilla Cir., Fountain Valley, Calif. 92708, and John P. Robertson, 2307 Aralia St., Newport Beach, Calif. 92660

Filed Apr. 28, 1978, Ser. No. 901,138

Int. Cl.[2] G06M *3/08*

U.S. Cl. 235—92 ST **15 Claims**



1. An electrical totalizer for forming an output signal with occurrences separated by a minimum time interval and representative of the total number of random occurrences in first and second circuits, comprising:

first and second input circuits for receiving occurrences from, respectively, such first and second circuits;

first and second bistable state circuits for responding to separate strobes for changing states for each occurrence at, respectively, the first and second input circuits;

combining means coupled to the first and second bistable state circuits for forming an output representation for each different occurrence at both input circuits;

separator means for forming in an output signal an output occurrence responsive to an applied strobe for each of the output representations; and

means operative during repetitive cycles for applying, during each cycle, a strobe to each of the first and second bistable state circuits and to the separator means in a predetermined sequence.

4,227,071

ELECTRONIC CURRENCY COUNTER

Dmytro Tomyn, 58 Stephenson Cres., Saskatoon, Sask., Canada (S7H 3L7)

Filed Sep. 8, 1978, Ser. No. 940,632

Int. Cl.[3] G06M *9/00*

U.S. Cl. 235—92 SB **2 Claims**

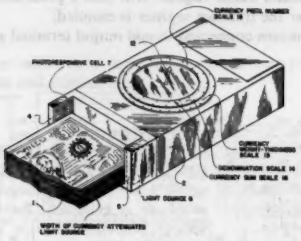
1. An electronic currency counter for counting a stack of paper currency, said currency counter comprising

a pocket-sized housing having a ledge extending therefrom bordered by a pair of spaced parallel side walls perpendicular to the ledge forming an enclosure for accommodating at least one end part of a stack of paper currency;

a source of light in one of the side walls for providing light extending to the other of the side walls and illuminating

said other of the side walls entirely, from the ledge to the top of said other side wall;

a plurality of photoresponsive cells on said other of said side walls for receiving the light from the source of light, said photoresponsive cells being arranged in rows parallel to said ledge, each of the rows of cells being dimensioned to correspond to the thickness of a single piece of paper currency, said photoresponsive cells functioning as a currency sensor and producing an electrical signal for each row of cells obstructed and therefore for each piece of paper currency resting on said ledge between said side walls;



counter means in the housing electrically connected to the cells for counting the electrical signals produced thereby;

indicating means in the housing electrically connected to the counter means for visually indicating the count of said counter means; and

a source of electrical energy in the housing electrically connected to the indicating means and the source of light whereby said indicating means indicates the number of pieces of paper currency in the stack of currency resting on said ledge in said enclosure.

4,227,072

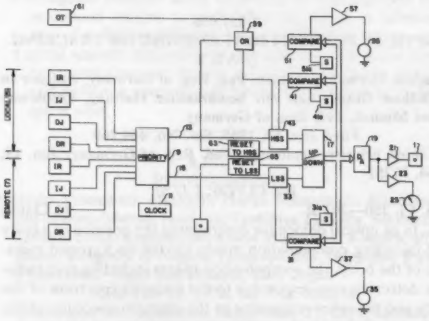
REFERENCE SIGNAL CIRCUIT

Thomas A. Fancy, Westminster, and Donald F. Behringer, Ashburnham, both of Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 26, 1978, Ser. No. 928,246

Int. Cl.[2] G06M *3/12, 3/14*

U.S. Cl. 235—92 CA **4 Claims**



1. A speed reference signal circuit for providing a desired speed reference signal into a speed control system comprising:

a keyboard for introducing the desired speed signal into the reference signal circuit;

priority logic for determining an up count or down count signal;

an up-down counter for receiving up counts and down counts and providing an output signal representative of desired speed;

an up count channel and a down count channel interconnecting the priority logic with said up-down counter;

a first feedback loop interconnecting the up-down counter output with down count inhibit means in said down count channel; said first feedback loop including a comparator for comparing said counter output with a preset low speed value;

a second feedback loop interconnecting the up-down counter output with up count inhibit means in said up count channel; said second feedback loop including a comparator for comparing said counter output with a preset overspeed value;

a third feedback loop interconnecting the up-down counter output with the up count inhibit means in said up count channel; said third feedback loop including a comparator for comparing said counter output with a preset high speed value; and,

high speed override means interconnecting the high speed value comparator with the up count inhibit means, said override means having an overspeed test enabling input whereby the down count inhibit will prevent further decrement of the up-down count at a preselected low speed value; the up count inhibit will prevent further increment of the up-down counter at a preselected overspeed value; and, the up count inhibit will prevent further increment of the up-down counter at a preselected high speed value below said overspeed value unless there is an enabling input into said override means.

4,227,073

CHECK NUMBER COUNTER DEVICE FOR PAPER COUNTING MACHINE

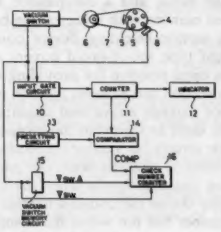
Tuyoshi Miyagawa, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1978, Ser. No. 953,747

Claims priority, application Japan, Oct. 25, 1977, 52-143238[U]

Int. Cl.[2] G06M *7/06*

U.S. Cl. 235—92 SB **1 Claim**



1. In a paper counting machine, including:

a suction cylinder for sucking to deflect sheets of paper one by one so that the latter may be counted,

a vacuum switch for controlling the operations of said suction cylinder for generating an operation terminating signal indicating when the operations of said suction cylinder are terminated,

counter means for counting the number of said deflected sheets until generation of said operation terminating signal, and generating a counter output, and

comparator means for comparing said counter output with a predetermined number, and issuing a coincidence signal when said counter output and said predetermined number coincide;

a check number counter device comprising:

AND gate means responsive to both said coincidence signal and the operation terminating signal of said vacuum switch for generating a gate output when both the coinci-

dence signal and the operation terminating signal are received, and for not generating said gate output when both the coincidence signal and the operation terminating signal are not received; and

counter means responsive to the gate signal of said AND gate means for counting occurences thereof, whereby to count the number of coincidence signals.

4,227,074

COUNTING SECTION SHIELDING DEVICE FOR PAPER SHEET COUNTING MACHINE

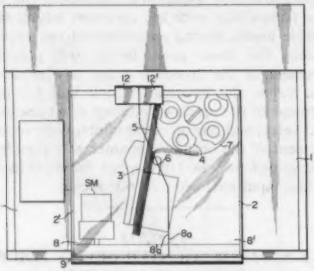
Tuyoshi Miyagawa, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1979, Ser. No. 6,901

Claims priority, application Japan, Feb. 8, 1978, 53-15323[U]

Int. Cl.[2] G06M *9/02*

U.S. Cl. 235—92 SB **4 Claims**



1. In a paper sheet counting machine comprising: a counting section including a paper holder made movable between an open stand-by position in which the machine in ready to receive paper sheets for counting and a closed holding position for holding the paper sheets, a rotatable suction drum, and a plurality of rotatable suction cylinders carried on said suction drum for sucking the paper sheets one by one so as to count the number of the same; and a comparator for comparing the actual counted number with a preset number,

a counting section shielding device comprising: a pair of double-leaf type sound-proof covers made movable between an open position for providing easy access to said counting section and a closed position in which the shielding device extends above said counting section so as to shield the same and prevent the escape of noise and dust; an electric circuit for generating closing signals after said paper holder is charged with the paper sheets and for generating opening signals when the comparison by said comparator shows the counted number to be equal to the preset number but not when the comparison shows said numbers to be unequal, said electric circuit including a resetting button made manually operable for generating the opening signals of said electric circuit; and drive means made responsive to both the closing signals of said electric circuit for closing said sound-proof covers and the opening signals of the same for opening said sound-proof covers as well as said paper holder.

4,227,075

MULTICHANNEL FIBER OPTIC CONTROL SYSTEM

John M. Holland, Shawsville, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 30, 1977, Ser. No. 829,168

Int. Cl.[2] H04B *9/00*

U.S. Cl. 370—4 **49 Claims**

1. A multichannel fiber optic transmission system, comprising:

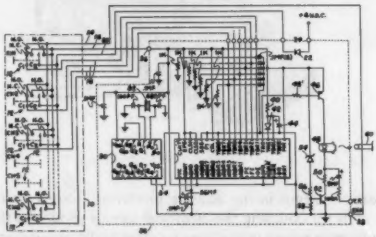
first UART circuit means for receiving a plurality of signals on separate input terminals and for providing said signals consecutively at a single output terminal, said circuit means including:

a transmit register empty (TRE) output which provides a one-level signal when the transmit register of the UART is empty;

a transmit buffer register load input (TBRL) which causes an input buffer register to load upon receipt of a one-level signal; and

an RC delay circuit that charges when the transmit register empty output provides a one-level signal and after a predetermined time delay provides a one-level signal to the transmit buffer register load input, whereby the transmit buffer register will load a predetermined time after the transmit register is emptied;

second means connected to said output terminal and responsive to the consecutive signals received therefrom for providing consecutive light signals corresponding to said consecutive signals;



optical waveguide means coupled to said light output means for conducting said consecutive light signals;

third means for receiving said light signals and in response thereto for providing consecutive electrical signals corresponding to the light signals; and

fourth means for receiving said consecutive electrical signals and in response thereto providing said signals simultaneously and separately at a plurality of output terminals whereby the first and second means are electrically isolated from the third and fourth means and the system is substantially unaffected by electromagnetic radiation due to the inherent dielectric characteristics of the optical waveguide means.

4,227,076

OPTICAL POSITION DETERMINING OR TRACKING DEVICE

Joachim Hermann, Munich, Fed. Rep. of Germany, assignor to Bölkow Gesellschaft mit beschränkter Haftung, Ottobrunn bei Munich, Fed. Rep. of Germany

Filed Jun. 11, 1965, Ser. No. 464,269

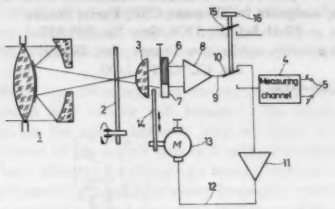
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1964, 77251

Int. Cl.[3] G01J *1/20*

U.S. Cl. 250—203 R **14 Claims**

1. In an optical device for determining the position of a body and including compensation means for the background radiation of the body, the compensation means including two radiation detectors, one responsive to the emission spectrum of the body and the other responsive to the emission spectrum of the background of the body, and having respective outputs supplying electric signal potentials corresponding to the radiation effective thereupon with the detector outputs being opposed to each other, and adjusting means operable to change the output of at least one detector prior to initiation of the position determining procedure; the improvement comprising, in combination, a control device for said adjustment means; means applying the difference of the electrical signal potentials to said

control device to operate said adjusting means in a direction to balance the detector outputs; and switch means operable,



responsive to initiation of the position determining procedure, to deactivate said control device.

4,227,077

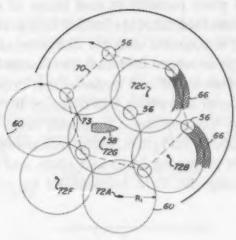
OPTICAL TRACKING SYSTEM UTILIZING SPACED-APART DETECTOR ELEMENTS

James E. Hopson, Wellesley, and Arthur B. Slater, Lexington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 129,414, Mar. 30, 1971. This application Feb. 26, 1973, Ser. No. 337,049

Int. Cl.[3] G01J *1/20;* F41G *7/00*

U.S. Cl. 250—203 R **18 Claims**



15. A radiation tracker system comprising:

a gyroscopically stabilized platform;

means for deflecting radiation;

a hexagonal detector array supported by said platform and positioned relative to said deflecting means to intercept rays of radiation deflected by said deflecting means; and

a spiral scanner supported by said platform, the spiral scanner positioning and driving said deflecting means to scan said radiation towards said hexagonal detector array in a spiral scan.

4,227,078

PHOTO-SENSOR

Hideaki Yamamoto, Hachioji; Haruo Matsumaru, Hinodemachi; Makoto Matsui, Hachioji; Toshihisa Tsukada, Sekimachi; Tadaaki Hirai, Koganei, and Eiichi Maruyama, Kodaira, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Japan and Hitachi, Ltd., Japan

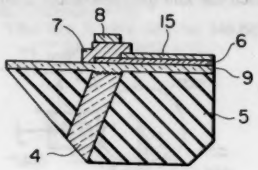
Filed Jun. 22, 1978, Ser. No. 918,273

Claims priority, application Japan, Jun. 27, 1977, 52-75593

Int. Cl.[2] G02B *5/14*

U.S. Cl. 250—227 **22 Claims**

1. A photo-sensor wherein a bundle of optical fibers extending from a first surface to a second surface of a predetermined substrate is disposed within said substrate, an array of photosensitive elements is integrated onto said substrate in such a manner that at least one transparent insulating layer intervenes between the photoelectric elements and an end face of the optical fiber bundle on the first surface side of said substrate, and an end face of said optical fiber bundle located on said



second surface of said substrate serves as an information reading face.

4,227,079

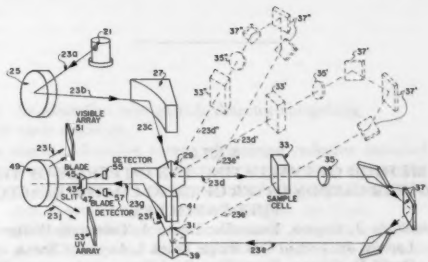
MULTIPATH FINE POSITIONING BEAM DIRECTOR

John N. Dukes, Los Altos Hills; Charles E. Bryson, III, Palo Alto, and Lynn Weber, Saratoga, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 15, 1978, Ser. No. 969,758

Int. Cl.[2] G01D *5/34;* G01J *3/42*

U.S. Cl. 250—231 SE **6 Claims**



1. Apparatus for directing a beam in an optical instrument along a plurality of sample paths and for correcting deviations in beam direction, comprising:

reflecting means rotatably mounted along a single rotation axis for directing the beam along any preselected sample path;

a plurality of folding elements, each element associated with a sample path for folding the path back to the reflecting means;

sensing means for sensing the rotational orientation of the reflecting means; and

control means, responsive to signals from the sensing means, for controlling the rotation orientation of the reflecting means.

4,227,080

DEVICE FOR SHIFTING FROZEN SPECIMEN, FOR USE IN SCANNING TYPE ELECTRON MICROSCOPE

Akimitsu Okura, Chiba; Syobu Saito, and Motohide Ukiana, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 4, 1978, Ser. No. 966,040

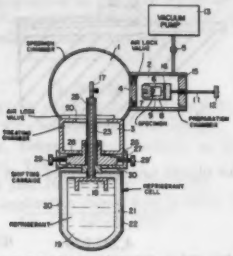
Claims priority, application Japan, Dec. 5, 1977, 52/144996

Int. Cl.[2] G01M *23/00*

U.S. Cl. 250—311 **10 Claims**

1. A device for shifting frozen specimen for use in scanning type electron microscope comprising: a first, second and a third chambers which are in mutual communication; a specimen unit including a specimen support having a recess, and a specimen holder adapted to hold a frozen specimen and detachably coupled to the opened end of said recess, said specimen unit being disposed for movement between said first and second chambers; a specimen receiving member disposed for

movement between said second and third chambers; and means for making said specimen holder engage said specimen receiving member, such that said specimen holder is separated from



said specimen support when said specimen unit and said specimen receiving member have been moved to said second chamber.

4,227,081

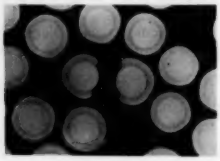
METHOD OF EVALUATING THE INTEGRITY OF THE OUTER CARBON LAYER OF TRISO-COATED REACTOR FUEL PARTICLES

Anthony J. Caputo, Knoxville; Dante A. Costanzo; Walter J. Lackey, Jr., both of Oak Ridge; Frank L. Layton, Clinton, and David P. Stinton, Knoxville, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 13, 1979, Ser. No. 48,290

Int. Cl.[2] G03B *41/16;* G03C *15/16;* G21C *17/00*

U.S. Cl. 250—321 2 Claims



1. A method for determining the existence of cracks penetrating the respective isotropic vapor-deposited carbon outer coatings covering respective silicon carbide coatings of respective triso-coated fuel particles, comprising the steps of subjecting said outer carbon coatings of said particles to a substantially pure chlorine gas atmosphere at a temperature of about 1500° C. for a selected time period in the range from 1 to 5 hours, cooling said particles, and finally radiographing said cooled particles to determine any change in density of the respective silicon carbide coatings of said particles as a result of any cracks in said outer coatings effecting a reaction between said chlorine gas and said silicon carbide coatings to form low density carbon and volatile silicon chloride, whereby any of said particles having cracks in the outer coating thereof can be readily determined from the resulting radiograph of said particles.

4,227,082

DETECTOR FOR DETECTING IONIZING RADIATION

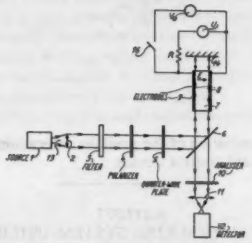
Christian Mayeux, and Francois Micheron, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jul. 25, 1978, Ser. No. 927,822

Claims priority, application France, Jul. 29, 1977, 77 23441

Int. Cl.[2] G01T *1/00*

U.S. Cl. 250—336 13 Claims



1. A detector for detecting ionizing radiation, comprising at least one point detecting unit, said unit comprising a plate of an electro-optical material arranged to receive an homogeneous beam of said radiation, said plate being capable of absorbing the most part of said radiation, the resistivity of said material being variable with respect to the intensity of said most part; said unit further comprising two electrodes arranged on opposite faces of said plate parallel to said beam of radiation and forming a capacitor; said detector further comprising electrical means supplying a constant current between said two electrodes, the voltage between said two electrodes being dependent upon the resistivity of said material and creating an electrical birefringence in said plate; said detector further comprising optical means for emitting a luminous beam of polarized light in the direction of said plate, polarization analysing means receiving the light emerging from said plate, and photodetecting means receiving the light transmitted by said analysing means.

4,227,083

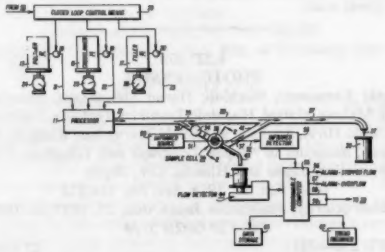
APPARATUS FOR INFRARED LASER SPECTROSCOPY OF ROOM TEMPERATURE VULCANIZABLE SILICONE COMPOSITIONS

Lawrence R. Sherinski, Ballston Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Feb. 2, 1979, Ser. No. 8,818

Int. Cl.[2] G01J *1/00*

U.S. Cl. 250—343 17 Claims



1. Apparatus for determining the concentration of a constituent in a process stream, comprising:

(a) means for bypassing a portion of said stream to a sample detection region;

(b) means for splitting said portion of said stream into first

and second parts and diverting said first part from said sample detection region;

(c) a sample cell comprising a pair of opposed infrared transparent windows extending in parallel planes wherein the space between said windows is adjusted upon consideration of the relative viscosity of said second part of said stream;

(d) means for diverting said second part of said stream through said sample cell between said windows and wherein the space between said windows defines the thickness of the sample stream flowing therebetween;

(e) a laser effective for directing a beam of infrared radiation maintainable at a predetermined frequency corresponding to a selected infrared absorption frequency of the constituent in the process stream under consideration through said windows of said cell and said second part of the process stream flowing therebetween; and

(f) means for continuously detecting the proportion of said infrared radiation at said predetermined frequency absorbed by said second part of said stream in said sample cell.

4,227,084

METHOD OF DETECTING HIGH ENERGY RADIATION VIA A BISMUTH OXIDE COMPOUND

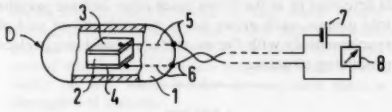
Helmut Thomann, Munich, and Christa Grabmaier, Kempfenhausen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 28, 1977, Ser. No. 837,197

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1976, 2644168

Int. Cl.[2] G01T *1/22*

U.S. Cl. 250—370 **5 Claims**



1. A dosimeter for detecting X-rays and γ-rays comprising:

a hollow capsule having an X-ray and γ-ray—sensitive body therein;

a pair of electrodes attached to opposite surfaces of said body;

means providing an electrical charge operationally coupled to said electrodes; and

means for sensing changes in the electrical charge on said body operationally coupled to said means for providing an electrical charge to said electrodes;

said X-ray and γ-ray—sensitive body being composed of a crystalline bismuth oxide compound having the formula:

$$Bi_{10-14}X_iO_n$$

wherein X is at least one element selected from the group consisting of Al, Ga, Ge, Si and Ti and n is a numeral substantially equal to the stoichiometric amount of oxygen within the compound, said compound being γ-ray and X-ray photoconductive so that when said compound is irradiated by a γ-ray or a X-ray, such ray causes an electrical change to occur in the electrical conductivity of said body.

4,227,085

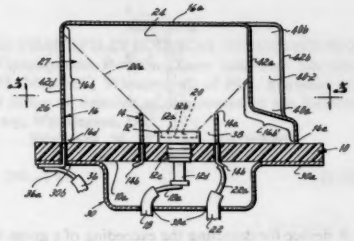
IONIZATION-TYPE PARTICLE DETECTOR

Paul B. Sunde, Northridge, Calif., assignor to Electrometer Corporation, Cincinnati, Ohio

Filed Oct. 5, 1978, Ser. No. 948,803

Int. Cl.[2] G01T *1/18*

U.S. Cl. 250—384 **3 Claims**



1. An ionization-type particle detector comprising:

an inner electrode,

a single radioactive source of ionizing radiation mounted proximate said inner electrode for directing a generally conical beam of ionizing radiation along a predetermined axis of symmetry, said beam having an envelope,

a generally cylindrical outer electrode symmetrically disposed about said inner electrode, said outer electrode having a longitudinal axis of symmetry substantially conincident with said predetermined axis of symmetry of said beam, said outer electrode having an opening therein communicating with the environment through which particles enter from the environment,

a source of potential connected between said inner and outer electrode,

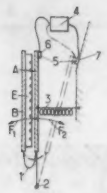
a generally cylindrical intermediate electrode disposed symmetrically about said inner electrode to define therebetween a compensation zone having a substantially saturated ion current which is substantially unaffected by changes in particle concentration therein, said intermediate electrode being generally concentric to said outer electrode to define therebetween a particle sensing zone having an unsaturated ion current which decreases with increasing particle density therein, said intermediate electrode having an opening in the top thereof co-extensive in area to the cross-sectional area of said intermediate cylindrical electrode, said opening being defined by an upper circular edge through which radiation from said source is emitted with the envelope of said beam dividing said sensing zone into an upper bipolar region interiorly of said beam and a lower unipolar region exteriorly of said beam, said intermediate and outer electrodes having diameters and heights designed relative to each other to approximately equally divide the potential of said source between said compensation and sensing zones and produce, in response to an increase in particles in said sensing zone, an ionization current decrease in said unipolar region which exceeds the ionization current decrease in said bipolar region by a factor of approximately three, thereby providing enhanced insensitivity of the detector to variations in environmental air velocity.

4,227,086

DETECTORS OF PARAMETERS ADAPTED TO ACT ON THE FORCE OF ATTRACTION BETWEEN AN ELECTRET AND AN ELECTRODE

Gérard Dreyfus, Résidence Bel Air, Bâtiment 2, Villebon S/Yvette-91120 Palaiseau; Jacques Lewiner, 5, rue Bory d'Arnex, 92210 Saint-Cloud, and Didier Perino, 10, rue de Bellevue, 92150 Suresnes, all of France

Filed Apr. 25, 1978, Ser. No. 899,862
Claims priority, application France, May 5, 1977, 77 13727
Int. Cl.[2] G01T *1/185*
U.S. Cl. 250—389 16 Claims



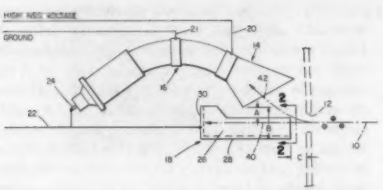
1. A device for detecting the exceeding of a given threshold by a parameter capable of affecting the electrostatic force of attraction exerted between a charged electret and one of two electrodes between which said electret is disposed, the parameter being other than a difference in electrical potential, and the two electrodes being at the same electrical potential, said device comprising means for enabling said parameter to affect said electrostatic force of attraction, return means for exerting an opposing force to said electrostatic force of attraction which serves to bias the said one electrode and the electret apart and detection means for detecting the relative displacement of the one electrode in relation to the electret which occurs when said electrostatic force of attraction becomes less than the opposing force of the return means.

4,227,087

BEAM DETECTOR

Edward A. Kurz, Leicester, Mass., assignor to Galileo Electro-Optics Corp., Sturbridge, Mass.

Filed May 18, 1979, Ser. No. 40,734
Int. Cl.[2] H01J *39/00;* G01K *1/08*
U.S. Cl. 250—397 10 Claims



1. In apparatus for detecting an ion beam, said apparatus including an electron multiplier, a deflector, a high-voltage lead for supplying a negative voltage to the inlet of said multiplier, and a low-voltage current-measuring lead connected to the outlet of said multiplier, said deflector lying along the undeflected trajectory of said beam and said inlet being displaced transversely from said trajectory, the improvement wherein:

said measuring lead is connected to said deflector and

said deflector and multiplier inlet are positioned with respect to said beam such that said beam is deflected into said inlet by the electric field generated by said high negative voltage at said inlet,

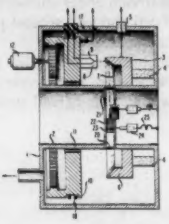
whereby said apparatus can conveniently be switched from an amplification mode in which said beam is deflected into said multiplier to a Faraday-cup mode in which said beam impinges on said deflector by only turning off said high-voltage lead, in both said modes the number of ions being measured as the current generated at said measuring lead which is common to both said multiplier outlet and deflector.

4,227,088

HIGH SPEED COMPUTER ASSISTED TOMOGRAPHY

Dan Maydan, Short Hills, and Lawrence A. Shepp, South Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 10, 1978, Ser. No. 949,979
Int. Cl.[3] G01N *21/34, 23/04*
U.S. Cl. 250—445 T 5 Claims



1. Apparatus for X-ray generation and detection for use in a transverse section computer assisted tomography system comprising a fixed circular anode (3) surrounding a patient area, a source (8) of electrons impinging upon said anode thereby producing X-rays directed through the patient area, and a circular array of detectors (22) characterized in that

said source of electrons is a single electron producing structure incorporated on a rotatable ring adjacent to said fixed circular anode, said ring surrounds the patient area and is substantially concentric with the longitudinal axis of the patient area; said single electron producing structure being orbitally movable by said ring around the patient area adjacent to said fixed circular anode, and

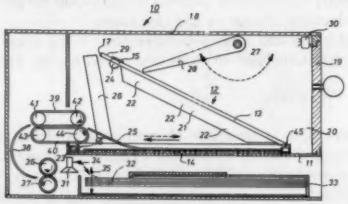
said detectors lie in the X-ray beam plane and are partitioned into groups, each group being movable out of said plane synchronously with the movement of said single electron producing structure.

4,227,089

APPARATUS FOR OPENING RADIOGRAPHIC CASSETTES

Hendrik S. Plessers, Boechout, and Julianus J. Hellemans, Kontich, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Oct. 16, 1978, Ser. No. 951,396
Claims priority, application United Kingdom, Oct. 18, 1977, 43329/77
Int. Cl.[2] G03B *41/16;* G11B *1/00*
U.S. Cl. 250—468 10 Claims



1. An apparatus for opening radiographic film cassettes

which comprises a housing and in said housing a platform for the introduction and withdrawal of the radiographic cassette into and from said housing, guide means for engaging a longitudinal edge of said cassette for aligning the cassette relative to said platform during its introduction, stop means for precluding further movement of the cassette when it has advanced to a predetermined location in said housing, and a cam surface is inclined inwardly relative to said platform with its lowermost end in the path of a laterally projecting lip portion of a cassette cover as the cassette is advanced relative to said inclined cam surface so that the cassette cover becomes progressively opened during its introduction into the housing.

4,227,090

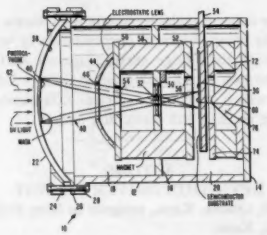
ELECTRON BEAM MICROFABRICATION APPARATUS AND METHOD

Kurt Amboss, Pacific Palisades, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 21, 1979, Ser. No. 13,588

Int. Cl.[3] A61K *27/02*; B01J *1/10*; G01N *23/00*

U.S. Cl. 250—492 A **11 Claims**



1. An electron beam microfabrication apparatus comprising:
- a substantially spherically curved female surface for receiving thereon a patterned photocathode;
- a semiconductor wafer holder positioned in front of said surface; and
- a lens for focusing electrons emitted from said patterned photocathode onto a wafer on said wafer holder on a demagnification scale so that when said photocathode is excited the patterned electron emission therefrom is focussed and demagnified and projected onto a resist on a wafer on said wafer holder for exposure thereon of a demagnified pattern.

4,227,091

OPTICAL MONITORING APPARATUS

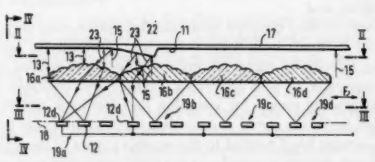
Erwin Sick, Icking, Fed. Rep. of Germany, assignor to Erwin Sick GmbH, Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Feb. 14, 1979, Ser. No. 12,046

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1978, 2808360

Int. Cl.[2] G01N *21/32*

U.S. Cl. 250—572 **7 Claims**



1. Optical monitoring appratus for the separate detection of light rays which leave a surface scanned by a light beam at various angles in which there is provided, in the path of the light rays leaving the surface, a strip-like row of Fresnel lenses extending in the scanning direction, said strip like row comprising a series of individual Fresnel lenses arranged edge-wise directly adjacent one another with at least the adjacent edges of each neighbouring pair of Fresnel lenses being plane and their being further provided a respective group of a plurality of photodetectors arranged in the focal plane of each individual Fresnel lens and processing means for processing the electrical output signals from said photodetectors.

4,227,092

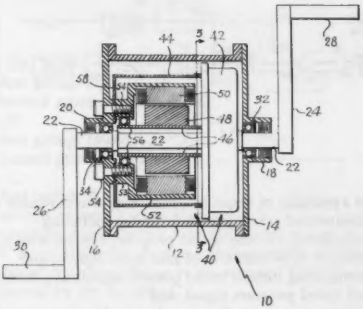
HAND CRANKED ELECTRICAL POWER SOURCE

Carl J. Campagnuolo, Potomac; Leon Scheinine, Adelphi, and Paul M. Mayercik, Wheaton, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 30, 1977, Ser. No. 855,859

Int. Cl.[3] H02P *9/04*

U.S. Cl. 290—1 C **11 Claims**



1. Apparatus for generating electrical power, which comprises:
- a relatively low-speed input shaft and a relatively high-speed output shaft,
- means for manually rotating said input shaft,
- harmonic drive means including a circular spline, a flexspline and a wave generator, said output shaft being rigidly connected to said wave generator,
- magnetic rotor means connected to rotate with said high-speed output shaft, and
- stator means positioned about said rotor means for generating electrical energy in response to rotation of said rotor means,
- wherein said rotor means and said stator means are arranged concentrically within said flexspline of said harmonic drive means.

4,227,093

SYSTEMS AND METHOD FOR ORGANIZING COMPUTER PROGRAMS FOR OPERATING A STEAM TURBINE WITH DIGITAL COMPUTER CONTROL

Robert Uram, East Pittsburgh, Pa., and Juan J. Tanco, Buenos Aires, Argentina, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 247,887, Apr. 26, 1972, abandoned. This application Aug. 24, 1973, Ser. No. 391,406

Int. Cl.[2] H02P *9/04*

U.S. Cl. 290—40 R **43 Claims**

1. An electric power generating system having a steam turbine, a steam generator, and an electric generator rotated by said turbine and adapted to be connected to an electric load, said system comprising:

a. means for digitally computing and processing, having a

central processing unit and a memory interconnected with said central processing unit;

b. means for converting input signals to digital data, said input converting means connected to said digital computing means;

c. means for converting digital data to output signals, said digital to output converting means connected to said digital computing means;

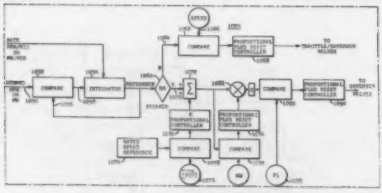
d-1. means for sensing the value of predetermined turbine operating parameters and for generating input signals representative of said parameters, said sensing means being connected to said input converting means;

d-2. means for supplying load demand input signals to said input converting means;

e. means for controlling the steam flow to said turbine;

f. means for connecting said output signal converting means to said steam flow control means;

g. said digital computer means comprising speed control means for automatic startup and synchronization of said generating system, and characterized in that it is programmed to per-



from a plurality of respective functions in accordance with a predetermined priority, said functions including

(i) computing turbine speed program signals which are a function of at least one of said input signals, and

(ii) computing turbine speed control signals as a function of said speed program signal, and

(iii) computing controller signals as a function of said load demand signals, for operation of said controlling means under load mode conditions, and

(iv) continuously computing, throughout a predetermined startup speed range and during load operation, control signals for operation of said controlling means; and

h. said computed speed control signals and controller signals being converted to output signals by said output converting means for controlling said steam flow control means as a function of said sensed parameters so as to control steam flow as an intermediate variable, and to control turbine speed during startup as an end operating variable and turbine load during load operation as an end operating variable, thereby providing continuous control through startup and load operation.

4,227,094

SWITCHING MATRIX FOR WIDE BAND ELECTRIC TRANSMISSION SIGNALS

Pierre Semur, Bondoufle, and Marcel Basset, Villaine, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

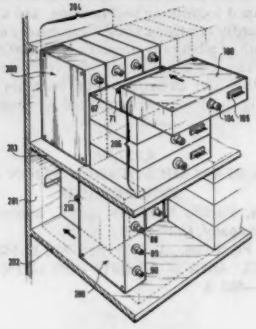
Filed Jul. 9, 1979, Ser. No. 55,670

Claims priority, application France, Jul. 12, 1978, 78 20845

Int. Cl.[2] H01H *25/00;* H06Q *1/16*

U.S. Cl. 307—113 **3 Claims**

1. A switching matrix for wide band electric transmission signals, said matrix comprising inlet/outlets, two sets of conductors which lead to the inlet/outlets, one of the sets forming the columns while the other set forming the rows of the matrix, controlled switching points disposed at the intersections of the conductors and constant current sources arranged to control the switching points wherein the switching points are symmetrical structure being constituted by two half switching points and wherein each row and each column of the matrix is provided on a corresponding separate plane support with each row conductor or column conductor being wired together with the half switching points which are connected directly to it, the supports being assembled in two stacks, one constituted by the supports which contain the row conductors, the other



constituted by supports which contain the column conductors, the two stacks being disposed perpendicularly to each other and placed with their edge surface against each other, the supports of the two stacks including, at their points of contact connections which provide electrical connections between corresponding pairs of half switching points.

4,227,095

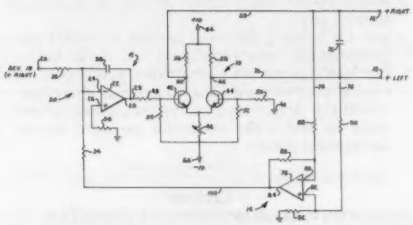
DEVIATION DRIVER CIRCUIT

Ralph E. Bazil, Olathe, Kans., assignor to King Radio Corporation, Olathe, Kans.

Filed Jun. 30, 1978, Ser. No. 921,078

Int. Cl.[2] G06G *7/12;* H03K *1/14*

U.S. Cl. 307—229 **10 Claims**



1. A deviation driver circuit for producing a difference voltage having a magnitude related to the voltage of a DC deviation signal which is generated by an external source, said deviation driver circuit comprising:

a first differential amplifier producing said difference voltage in response to an input signal, said difference voltage having a magnitude related to the voltage of said input signal; and

a feedback loop coupled with said first differential amplifier, said feedback loop being comprised of means for producing a feedback signal having a voltage level related to the magnitude of said difference voltage and multiple input integrating means for summing said feedback signal with said deviation signal to provide a summation signal having a current level related to the algebraic sum of the voltage of said deviation signal and for integrating said summation signal to provide said input signal, wherein said means for producing a feedback signal being further comprised of a second differential amplifier operable to produce a feedback signal having a voltage level related to the magni-

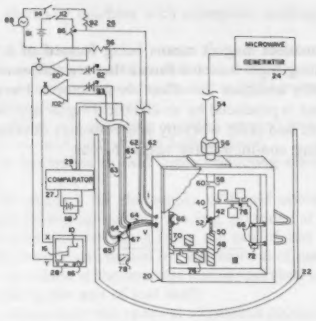
tude of said difference voltage, said second differential amplifier having a first and a second input and a single output, said second differential amplifier being coupled with said first differential amplifier so that said difference voltage is provided to the first and second inputs of said differential amplifier.

4,227,096

MICROWAVE INTEGRATED CIRCUIT FOR JOSEPHSON VOLTAGE STANDARDS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Louis B. Holdeman, Boyds; Jaan Toots, Gaithersburg, both of Md., and Chu-Cheng Chang, Kowloon Tong, Hong Kong

Filed Aug. 31, 1978, Ser. No. 938,298
Int. Cl.[3] G01R *23/06*
U.S. Cl. 307—233 R **6 Claims**



1. A Josephson junction type voltage standard comprising:
first and second electrical resonators tuned to resonate at a selected, like, frequency;
a Josephson junction connected electrically between said resonators;
coupling means for coupling a signal of said selected frequency to at least one of said resonators;
a D.C. series circuit comprising a low-pass filter, a variable potential D.C. junction bias source, and said resonators for applying a selectable bias to said Josephson junction; and
means coupled to said series circuit for detecting the current-voltage characteristic of said Josephson junction, whereby a precise voltage related to said frequency may be determined.

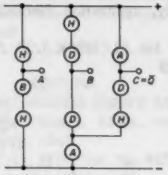
4,227,097

LOGIC D FLIP-FLOP STRUCTURE

Christian Piguet, Neuchatel, Switzerland, assignor to Centre Electronique Horloger, S.A., Breguet, Switzerland

Filed Jul. 7, 1978, Ser. No. 922,843
Claims priority, application Switzerland, Jul. 8, 1977, 8473/77
Int. Cl.[2] H03K *3/286, 3/353, 19/08, 19/20*
U.S. Cl. 307—279 **11 Claims**

1. A logic bistable D flip-flop structure capable of being realized in integrated circuit technology with complementary MOS transistors, comprising at least three logic gates each of which comprises a first group of transistors of a first conduction type and a second group of transistors of a second conduction type, these two groups of transistors being connected in series across the terminals of a voltage supply source and their common connection point forming the output node of the gate, the conduction paths of the transistors of each group being connected in series and/or in parallel with each other so that the conduction state of these transistors defines the potential at the output node of the gate, which represents the inner variable provided by this gate and may take values substantially equal to those at the two terminals of the voltage supply source, the terminal connected to the first group of transistors having a potential 1 and the terminal connected to the second group of transistors the potential 0, each transistor being controlled by an inner variable or by an external control variable such as D or H, where H is a clock signal, the said structure having a dynamic behavior at least for H = 1 and comprising the following logic gates respectively indicated by the inner variable they provide, said gates being formed by transistors indicated for each group and designated by their respective control variables, the series connection of these transistors being indicated by "series":
Gate A:



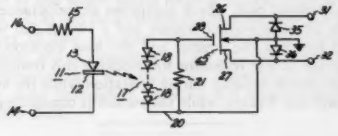
first group: H
second group: B series H
Gate B:
first group: H series D
second group: D series A
Gate C:
first group: A
second group: D series H series A,
the transistor controlled by A in the second groups of gates B and C being preferably common to these gates and the output variable of the circuit being in the inverted form Q and being constituted by the variable C.

4,227,098

SOLID STATE RELAY

Dale M. Brown; Marvin Garfinkel, both of Schenectady, N.Y., and John A. Laurent, Pittsfield, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 21, 1979, Ser. No. 13,675
Int. Cl.[2] H03K *3/42, 17/60*
U.S. Cl. 307—311 **9 Claims**



1. A solid state relay comprising
a pair of input terminals,
a light-emitting diode connecting to said input terminals for generating radiation in response to current applied to said input terminals,
an array of photodiodes series connected between a pair of array electrodes and optically coupled to said light-emitting diode for developing a control voltage across said array electrodes in response to radiation from said light-emitting diode,
a field effect transistor including a pair of current carrying electrodes, a gate electrode and a substrate electrode, one of said array electrodes connected to said gate electrode and the other of said array electrodes connected to said substrate electrode whereby the impedance between said current carrying electrodes has one value in the absence

of, and another greatly different value in the presence of said control voltage between said gate electrode and said substrate electrode,

means for providing a large resistive impedance between said gate electrode and said substrate electrode,

a pair of output terminals, each connected to a respective one of said current carrying electrodes.

4,227,099

CIRCUIT ARRANGEMENT COMPRISING A HIGH-VOLTAGE POWER TRANSISTOR

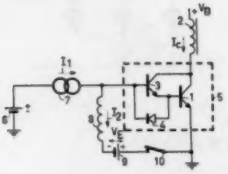
Henk Houkes, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 12, 1978, Ser. No. 941,564

Claims priority, application Netherlands, Oct. 10, 1977, 7711083

Int. Cl.² H03K *3/26, 17/60*

U.S. Cl. 307—315 **9 Claims**



1. A circuit arrangement comprising a high-voltage power transistor, drive means for supplying a pulse-shaped switching signal to the base electrode thereof, a voltage supply source and a load impedance connected to the collector electrode of the high-voltage power transistor and to the voltage supply source, the collector current of the high-voltage power transistor, driven to the saturation state, supplied by the voltage supply source, being interruptable under the influence of the pulse-shaped switching signal applied thereto, and the drive means comprising an additional transistor, the emitter electrode of which is connected to the base electrode of the high-voltage power transistor and the collector electrode of the additional transistor is connected to the collector electrode of the high-voltage power transistor, wherein the drive means further comprises two current paths, namely a first current path comprising a switched-mode current source coupled to the base electrode of the additional transistor for making and maintaining the high-voltage power transistor conductive, and a second current path which comprises an inductance, a substantially constant-voltage source and a switch and which is included between the emitter and the base electrode of the high-voltage power transistor for blocking this transistor, the switched current flowing during operation while the switch is cut off and not flowing while the switch is conducting.

4,227,100

DUAL OUTPUT FORCE MOTOR

Frederick D. Ezekiel, Lexington, and Alf L. Carroll, Jr., Cohasset, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Continuation of Ser. No. 801,692, May 31, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 15,280

Int. Cl.² H02K *33/00*

U.S. Cl. 310—13 **3 Claims**

1. An electrical force motor comprising:

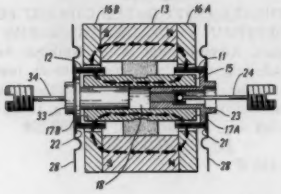
an elongate tubular structure of magnetic material;

an elongate cylindrical structure of magnetic material positioned within said tubular structure and spaced therefrom;

pole piece means attached to opposite ends of said structures forming coaxial circular air gaps of equal diameter and width at the respective ends;

one of said structures including permanent magnet means establishing a single magnetic flux path which serially passes through both said tubular and cylindrical structures and across each air gap at the respective ends of said structures;

first and second movable coils of equal diameter positioned within said air gaps respectively and adapted to be actuated by independent electrical signals;



said permanent magnet means being formed of a material exhibiting high coercive forces that are sufficient to substantially minimize the effect on the output force of one coil that is produced by an electrical signal applied to the other of said coils, whereby said coils may develop corresponding non-interactive output forces.

4,227,101

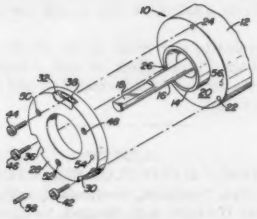
STEPPER MOTOR AND ADAPTOR RING

Vahe H. Malakian, and Howard F. Hendricks, both of Lansdale, Pa., assignors to Transicoil, Inc., Worcester, Pa.

Filed Jun. 5, 1978, Ser. No. 912,634

Int. Cl.² H02K *37/00*

U.S. Cl. 310—49 R **7 Claims**



1. Apparatus comprising:

(a) a stepper motor including a housing, said motor having a shaft extending through an opening in said housing, said shaft having a flat on an exposed portion thereof,

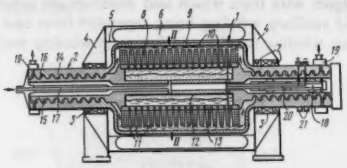
(b) an adapter ring coaxial with said housing opening and through which the motor shaft extends, means coupling said ring to one end of said housing in a manner so that ring has limited rotation relative to said housing, said ring having a plurality of mounting holes for selective coupling of said ring and housing to a support, and said ring having a hole to facilitate permanent securement of the ring to the housing to prevent said relative rotation whereby said ring may be secured to said housing upon adjustment of the mounting holes to a detented position to said flat on said shaft.

4,227,102

ELECTRICAL MACHINE WITH CRYOGENIC COOLING

Lev M. Rozenfeld, ulitsa Pravdy, 7a, kv. 30; Jury S. Popov, ulitsa Bariernaya, 16, kv. 14, and Anatoly G. Korolkov, ulitsa Ivanova, 5, kv. 71, all of Novosibirsk, U.S.S.R.

Filed May 10, 1978, Ser. No. 904,430
Int. Cl.[2] H02K 9/00
U.S. Cl. 310—52 7 Claims



1. An electrical machine with cryogenic cooling, comprising:

a sealed housing;

a stator winding secured in said sealed housing;

a hollow rotor arranged inside said sealed housing;

a shaft of said hollow rotor;

a superconducting exciting winding secured in said hollow rotor on said shaft of said hollow rotor;

busbars connected to said superconducting exciting winding;

an axial channel for the supply of liquid coolant to said superconducting exciting winding, provided at one end of said shaft and extending along the axis of said shaft;

an additional axial channel for the removal of gaseous coolant, provided at the opposite end of said shaft and extending along the axis of said shaft;

other channels for the removal of gaseous coolant, provided at both ends of said shaft and in communication with the inner cavity of said rotor, and adapted to be connected to gas collectors;

at least two chambers provided on said shaft of said rotor and extending over the entire length of said superconducting exciting winding, parallel with and extending along the axis of said shaft, and communicating with said axial channel for the supply of liquid coolant and with said additional axial channel for the removal of gaseous coolant;

radial channels provided within said exciting winding, and said radial channels arranged to provide communication between said chambers and said cavity of the rotor; and

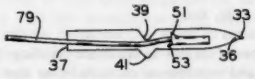
longitudinal channels adapted to remove the gaseous coolant, provided at the outer peripheral surface of said superconducting exciting winding along the entire length thereof, whereby said coolant is continuously separated in the course of its movement toward said sealed housing of said rotor and the temperature of said superconducting exciting winding is substantially more stablized.

4,227,103

APPARATUS FOR INSULATING AN INTERNAL MOTOR CONNECTION

Calvin Humes, Jr., Sycamore, Ill.; Sammy L. Miller, Jurong Town, Singapore, and Alan L. Kindig, Holland, Mich., assignors to General Electric Company, Fort Wayne, Ind.

Filed Feb. 21, 1978, Ser. No. 879,395
Int. Cl.[3] H02K 11/00
U.S. Cl. 310—71 1 Claim



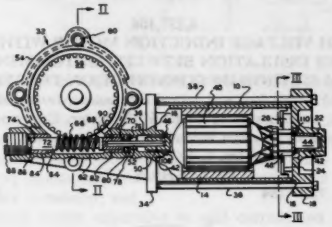
1. In a stator assembly for use in a dyanmo-electric machine comprising a magnetic core, windings, and a plurality of lead wires interconnected by crimp connections, wherein a plurality of crimp connections are disposed in multi-connection protecting insulator made from insulating material arranged to define a plurality of longitudinally extending insulating compartments, wherein the multi-connection protecting insulator is formed of a sheet of insulating material having first and second compartments laterally separated from one another, and wherein the plurality of insulated compartments are defined by a single sheet of insulating material, the improvement wherein: exterior walls of the compartments of the insulator have transversely extending depressions therein so that correspondingly located irregularities are provided along the interiors of the plurality of compartments, whereby intentional removal of connection means from each compartment is permitted, while inadvertent removal of connections from each compartment is impeded.

4,227,104

ELECTRIC MOTOR DRIVE UNIT

Lyle J. Hamman, Eaton Rapids, Mich., assignor to Eaton Stamping, Eaton Rapids, Mich.

Filed Mar. 13, 1978, Ser. No. 885,863
Int. Cl.[2] H02K 7/10
U.S. Cl. 310—75 R 5 Claims



1. An electric motor drive unit for driving a worm wheel comprising, in combination, an electric motor casing having first and second ends, an end cap mounted on said casing first end, a worm wheel housing mounted upon said casing second end having worm wheel support means defined thereon, armature bearing means mounted in said end cap and housing, an armature mounted in said casing rotatably mounted upon said bearings having an axis of rotation, a worm shaft rotatably mounted in said worm wheel housing coaxial with said armature axis, radial and thrust bearings mounted upon said housing separately of said armature bearing means supporting said worm shaft, and an elongated self-aligning drive member interposed between said armature and worm shaft producing a positive drive connection between said motor armature and said worm shaft.

4,227,105

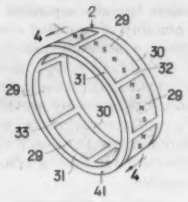
ANNULAR MAGNET ASSEMBLY

Shokichi Kumakura, 5-3, Funabori 2 chome, Edogawa-ku, Tokyo, Japan

Continuation of Ser. No. 808,218, Jun. 20, 1977, abandoned.
This application Jun. 4, 1979, Ser. No. 45,503
Claims priority, application Japan, Jun. 21, 1976, 51-80400; Jun. 21, 1976, 51-80404; Nov. 15, 1976, 51-152887
Int. Cl.[2] H02K 21/22
U.S. Cl. 310—153 7 Claims

1. An annular magnet assembly adapted to be mounted on an annular or cylindrical surface of a dynamoelectric machine for producing a magnetic field therein, comprising a plurality of arcuate permanent magnets disposed in an end-to-end abutment to form an annular array, each of the permanent magnets having a first and a second major surface, the first surface

being in engagement with the annular or cylindrical surface of the machine, both ends of each permanent magnet being cut to form a recess in the second major surface at the respective abutment of the magnets, said recess being disposed on opposite sides of the respective abutment of the magnets and extending axially across the axial width of said magnets, and a frame



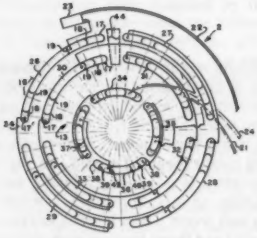
member of a non-magnetic material for rigidly connecting the magnets together, the frame member including a pair of annular portions which tightly engage the opposite sides of the annular array and ledge portions disposed in said recesses and extending axially across the width of said magnets to connect the pair of annular portions together and radially retain said magnets in said frame member.

4,227,106

HIGH VOLTAGE INDUCTION MOTOR WITHOUT LADDER INSULATION BETWEEN MOTOR WINDINGS AND METHOD OF CONSTRUCTION THEREFOR

Raymond Druss, deceased, late of Florissant, Mo. (by Marian A. Druss, executrix), and Glenn Hoffmeister, Crestwood, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Mar. 4, 1976, Ser. No. 664,060
Int. Cl.[3] H02K *3/00*
U.S. Cl. 310—184 **7 Claims**



1. A permanent split capacitor induction motor having an input voltage at and above 440 volts, comprising:

a rotor; and

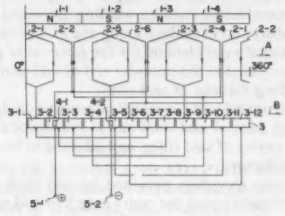
a stator assembly, said stator assembly including a core of magnetic material, said core being constructed from a plurality of individual laminations, said laminations having a central opening in them, and a plurality of receptacles extending radially outwardly from said central opening, the receptacles defining winding receiving, closed bottom slots and the central opening defining a rotor receiving bore, insulation means along at least the closed bottom portion of said slots, windings in said slots, said windings including a main winding and an auxiliary winding, said main winding comprising a first winding part and a second winding part, each of said first and said second main winding parts comprising a plurality of wire coil sets constructed from a number of individual wire turns, said wire turns being constructed from magnet wire, said magnet wire including an insulation film about an electrical conductor, said first and said second main winding parts being connected in series to one another, said auxiliary winding being connected in parallel with said first main winding part, said auxiliary winding being positioned in said slots adjacent the coil sets of the main winding part with which it is electrically connected, said auxiliary winding and said first main winding part being placed adjacent one another in said slots so that at least some wire turns of said main and said auxiliary windings are continuous with one another along the insulation coating of the magnet wire from which said windings are constructed, said auxiliary winding being separated from said second main winding part by said first main winding part.

4,227,107

DIRECT CURRENT MOTOR WITH DOUBLE LAYER ARMATURE WINDINGS

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo; Manabu Shiraki, 4451-171, Shimotsuruma, Yamato-shi, Kanagawa-ken, and Kazuhito Egami, 2-44-1, Chuo, Nakano-ku, Tokyo, all of Japan

Filed Jul. 31, 1978, Ser. No. 929,565
Claims priority, application Japan, Dec. 5, 1977, 52/145179
Int. Cl.[3] H02K *3/00, 23/26*
U.S. Cl. 310—198 **2 Claims**



1. An improved direct current motor having an armature and armature windings for intersecting a magnetic path of a field magnet, said armature windings superposed on each other in double layers, wherein the improvement comprises:

a field magnet having 2 mn poles arranged peripherally at equal angular spacings and alternately magnetized to N and S polarities wherein m is a positive integer equal to or greater than 1 and n is a positive integer equal to or greater than 2;

a magnetic material for closing the magnetic path of said field magnet;

a first series of m(2n−1) armature windings mounted on said armature so that said windings are juxtaposed side-by-side at equal pitches, each said winding having conductor portions for generating torque which are angularly spaced from each other a distance equal to the angular width of each said field magnet pole;

a second series of m(2n−1) armature windings mounted on said armature so that said windings of the second series are juxtaposed side-by-side at equal pitches, each said winding of the second series having conductor portions for generating torque which are angularly spaced from each other a distance equal to the angular width of each said field magnet pole, and

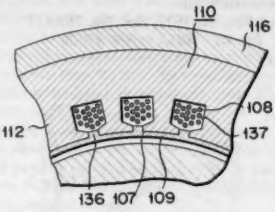
the first series of m(2n−1) armature windings and the second series of m(2n−1) armature windings being interconnected and superposed on each other and having a phase shift with respect to each other equal to 1/(2n−1) of the angular width of each said field magnet pole.

4,227,108

GLASS COMPOUND LAYER FOR MECHANICAL AND THERMAL PROTECTION OF A LAMINATED IRON CORE ROTARY ELECTROMACHINE

Teruo Washizu, Yokohama, and Eizo Goto, Chigasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 24, 1978, Ser. No. 899,459
Int. Cl.³ H02K *3/48*
U.S. Cl. 310—214 **5 Claims**



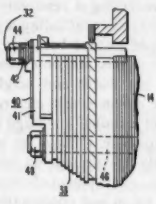
1. A laminated iron core for rotary electromachines comprises a plurality of laminar metallic plates laid on each other, a glass layer disposed between each pair of the contiguous metallic plates to bond one to another, and a glass-compound layer means consisting essentially of glass and aggregates bonded in said glass and formed on end faces of the laminar metallic plates, for providing thermal resistance as well as mechanical impact protection.

4,227,109

SYSTEM FOR PROVIDING UNIFORM AXIAL EXPANSION OF A STATOR CORE

Arthur Mulach, Penn Hills Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 30, 1978, Ser. No. 965,013
Int. Cl.³ H02K *1/12*
U.S. Cl. 310—258 **3 Claims**



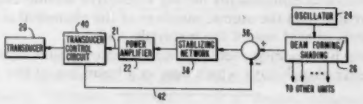
1. A dynamoelectric machine comprising:
a cylindrical stator core constituting a plurality of axially adjacent laminations, each of said laminations having radially inner and outer peripheries, said inner periphery having slots which extend a predetermined distance in the radially outer direction terminating on an intermediate portion;
a frame disposed about said stator core;
a plurality of bore rings circumferentially disposed about said stator core to provide circumferential structural support therefor;
means for structurally connecting said bore rings and said frame to provide an axially rigid link therebetween;
a plurality of axially extending threaded building bolts rigidly connected to said bore rings and in axially sliding relationship with said laminations along said outer peripheries;
a plurality of axially extending threaded through-bolts disposed through said laminations' intermediate portions in axially sliding relationship therewith;
a plurality of through-nuts in torqued threaded engagement with said through-bolts, at least one through-nut being disposed on each axial end of each through bolt, said torqued threaded engagement providing a first predetermined axial displacement of said lamination's intermediate portions at a selected temperature;
a plurality of building nuts in torqued threaded engagement with said building bolts, at least one building nut being disposed on each axial end of each building bolt; and
biasing means disposed axially between said building nuts and said laminations for enabling a second predetermined axial displacement of said lamination's outer peripheries at the selected temperature, said second axial displacement being at least as great as said first axial displacement.

4,227,110

TRANSDUCER CONTROL SYSTEM

George R. Douglas, Arnold, and John H. Thompson, Severna Park, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 10, 1976, Ser. No. 740,683
Int. Cl.² H01L *41/10*
U.S. Cl. 310—316 **10 Claims**



1. A transducer control circuit for connection between a transducer and a transducer power source, said transducer having input leads, and an active acoustic radiation member subject to varying loading and a reaction member, comprising:
(a) means connected to said transducer input leads for obtaining signals indicative of the input current and voltage of said transducer; and
(b) circuit means responsive to said current and voltage indicative signals for generating a control signal proportional to the velocity of said radiation member.

4,227,111

FLEXIBLE PIEZOELECTRIC COMPOSITE TRANSDUCERS

Leslie E. Cross; Robert E. Newnham, both of State College, Pa., and Doyle P. Skinner, Pittsford, N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 28, 1979, Ser. No. 24,827
Int. Cl.² H01L *41/18, 41/22*
U.S. Cl. 310—358 **14 Claims**

1. A transducer comprising in combination
a piezoelectric ceramic formed with a multiplicity of three-dimensionally interconnected cavities;
an elastomer within said cavities; and
an electrode attached to a pair of opposite surfaces of said ceramic.

4,227,112

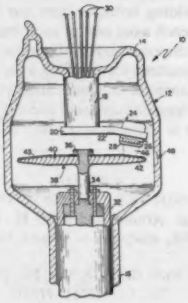
GRADATED TARGET FOR X-RAY TUBES

John S. Waugh, Wellesley, Mass., and Martin Braun, San Jose, Calif., assignors to The Machlett Laboratories, Inc., Stamford, Conn.

Filed Nov. 20, 1978, Ser. No. 962,443
Int. Cl.² H01J *35/10*
U.S. Cl. 313—41 **14 Claims**

9. An X-ray tube including:
a tubular envelope;
an X-ray target rotatably mounted in the envelope and having an annular focal track surface overlying a composite layer comprising a first material and a controlled gradient

of a second material disposed therein, one of the materials being a heat absorbent material comprised of one or more elemental components having respective atomic numbers no greater than thirty and the other of the materials being an X-ray emissive material comprised of one or more



elemental components having respective atomic numbers greater than the atomic numbers of the elemental components of said one of the materials; and

means for beaming electrons into the composite layer and generating X-rays which pass in a beam out of the tube.

4,227,113

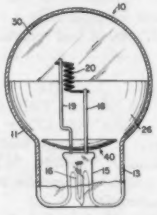
INCANDESCENT ELECTRIC LAMP WITH PARTIAL LIGHT TRANSMITTING COATING

Peter Walsh, Stirling, N.J., assignor to Duro-Test Corporation, North Bergen, N.J.

Filed Oct. 18, 1978, Ser. No. 952,266

Int. Cl.[2] H01K *1/14, 1/26, 1/32*

U.S. Cl. 313—112 **15 Claims**



1. An incandescent electric lamp comprising:

an envelope,

a filament within said envelope,

means for supplying electrical current to said filament to cause it to incandesce and produce energy in both the infrared and visible ranges,

the major portion of said envelope being curved and having an optical image axis for said filament,

a first coating on a first part of said major portion of said envelope for reflecting the major portion of both the infrared and the visible energy from the filament incident thereon,

a second coating on a substantial portion of the remaining part of said major portion of said envelope for reflecting the major portion of the infrared energy from the filament incident thereon and for transmitting therethrough the major portion of the visible energy from the filament incident thereon,

said filament being mounted off of said optical image axis, said coatings on said major portion of the envelope both reflecting incident infrared energy back toward said filament, and said first and second coatings being located with respect to said major portion of said envelope so that the infrared energy which is incident thereon and which is reflected is reflected back to impinge upon said filament after two reflections from said coatings.

4,227,114

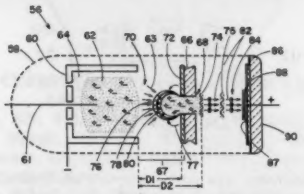
CATHODOLUMINESCENT GAS DISCHARGE IMAGE DISPLAY PANEL

Michael C. De Jule, Chicago, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Feb. 16, 1977, Ser. No. 769,127

Int. Cl.[3] H01J *63/04, 61/06*

U.S. Cl. 313—217 **6 Claims**



1. A very low pressure, high-voltage cathodoluminescent gas discharge image display panel having an ordered array of display elements, the panel including envelope means containing an ionizable gas at a predetermined very low pressure, said envelope means including a transparent faceplate on the inner surface of which are disposed cathodoluminescent target elements associated with said display elements, the panel comprising:

electron source means for producing at a given time at least one high-density electron beam, comprising:

rearwardly disposed cathode means for receiving a relatively low applied voltage;

grid means located forwardly of said cathode means and including at least an electron-transmissive anode means spaced a predetermined distance from said cathode means for receiving a relatively intermediate applied voltage, and further including a performance enhancement electrode located between said anode means and said cathode means, and co-extensive without interruption across the width and height of said panel, said performance enhancement electrode receiving through a single input terminal a voltage intermediate said relatively intermediate voltage on said anode means and said relatively low voltage on said cathode means, said performance enhancement electrode serving to stabilize said plasma sac in said constriction by conducting electrons from a surrounding area to said sac, thus discouraging the formation of a sac in non-energized neighboring constrictions, said performance enhancement electrode also serving to prime the contained gas in the region of said constriction and thereby permitting a plasma sac to be established in said constriction by application of a lower voltage on said anode means than otherwise possible;

constriction-forming means between said anode means and said cathode means defining a plurality of constrictions each respectively associated with one or more of said display elements, with said intermediate voltage, said predetermined distance, said very low gas pressure, and the individual width of said constrictions having values effective to support a gas discharge plasma between said cathode means and said anode means, and to cause a plasma sac to form in said plasma on the cathode side of said constriction-forming means about the constriction associated with any selected anode means, said plasma sac by its nature generating and gathering electrons from said

cathode means and accelerating them into said constriction to form a concentrated electron beam therein;

an ultor electrode disposed contiguous to said cathodoluminescent target elements on said faceplate for receiving a predetermined relatively high ultor voltage, said ultor electrode being separated by a predetermined spacing from said grid means to define an acceleration section therebetween, said spacing being so small that at said predetermined very low pressure and at said ultor voltage, no gas discharge plasma can possibly occur in the acceleration section, said ultor voltage establishing a high-voltage predient in the plasma-free acceleration section which is effective to straight-line accelerate said beam of electrons formed in said constriction in a substantially collision-free path directly into high-energy bombardment of said cathodoluminescent target elements disposed on said faceplate; and

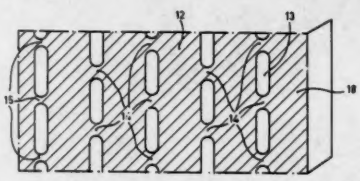
light-stopping means for blocking from view light produced by said plasma, whereby the useful visible light produced by said panel is solely that produced by said high-energy elelctron bombardment of said cathodoluminescent target elements on said faceplate.

4,227,115

COLOR DISPLAY TUBE WITH SHADOW MASK HAVING ELONGATED APERTURES THEREIN

Leonardus A. M. Elshof, and Herman F. Van Heek, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 813,838, Jul. 8, 1977, Pat. No. 4,159,177.
This application Feb. 21, 1979, Ser. No. 12,982
Claims priority, application Netherlands, Aug. 4, 1976, 7608643
Int. Cl.[2] H01J *29/07*
U.S. Cl. 313—403 **3 Claims**



1. In a color display tube having a shadow mask, the improvement wherein said mask comprises a metal sheet having a plurality of substantially parallel rows of elongated apertures, each pair of adjacent apertures in said rows being separated by a bridge, said bridges in each row having substantially the same width and said bridges in at least the three outermost rows nearest each of two opposite edges of the shadow mask being at least 20% wider than said bridges of a row at the center of said mask, said bridges in said outermost rows having a width between 120 μm and 150 μm.

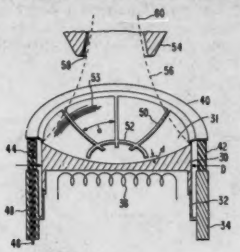
4,227,116

ZERO-BIAS GRIDDED GUN

George V. Miram, Atherton, and Gerhard B. Kuehne, Santa Clara, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Jul. 24, 1978, Ser. No. 927,087
Int. Cl.[2] H01J *29/46*
U.S. Cl. 313—447 **10 Claims**

6. In an electron gun for producing a linear beam of electrons, and having a thermionic cathode with a generally concave electron-emissive surface and maintained at a given cathode potential, the improvement comprising an electron-permeable control grid for modulating the current of said electron beam with control grid potential no more positive than said cathode potential, said grid comprising a plurality of conductive elements having a predetermined average first spacing therebetween, said control grid covering said cathode and being spaced therefrom by a predetermined second spacing, said first spacing being at least five times said second spacing,



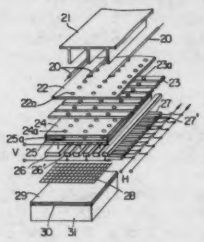
whereby the trajectories of electrons comprising said beam are not seriously disturbed, and useful electron current can be drawn from said emissive surface when said grid is at said cathode potential.

4,227,117

PICTURE DISPLAY DEVICE

Masanori Watanabe, Katano; Kinzo Nonomura, Hirakata, and Yoshinobu Takesako, Neyagawa, all of Japan, assignors to Matsuhita Electric Industrial Co., Ltd., Japan

Filed Apr. 24, 1979, Ser. No. 32,752
Claims priority, application Japan, Apr. 28, 1978, 53/51808; Apr. 28, 1978, 53/51810; Aug. 30, 1978, 53/106788
Int. Cl.[2] H01J *29/50, 29/70*
U.S. Cl. 315—13 R **12 Claims**



1. A picture display device comprising:

a plurality of linear thermionic cathodes;

partition means for separating said linear thermionic cathodes from one another;

electron beam extraction electrode means having a plurality of apertures formed therethrough in correspondence with said thermionic cathodes in the axial direction thereof for producing electron beams;

electron beam control electrode means comprising a plurality of electrodes including a plurality of apertures each thereof being coaxial with corresponding one of said apertures formed in said electron beam extraction electrode means, said control electrodes being arranged substantially perpendicular to said thermionic cathodes;

deflection electrode means for deflecting said electron beams;

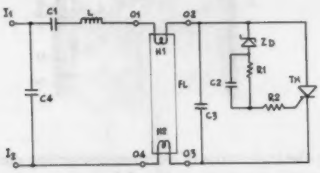
acceleration electrode means for accelerating said electron beams; and

display means coated with a fluorescent substance which emits light when hit by said electron beams and including a display screen, at least said display screen being housed in a transparent glass container.

4,227,118
CIRCUITS FOR OPERATING ELECTRIC DISCHARGE LAMPS

John Britton, West Kingsdown, England, assignor to The General Electric Company Limited, London, England

Filed Nov. 17, 1978, Ser. No. 961,651
Claims priority, application United Kingdom, Dec. 1, 1977, 50083/77
Int. Cl.[2] H05B *41/04, 41/18*
U.S. Cl. 315—101 9 Claims

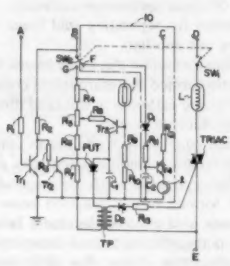


1. An electric discharge lamp circuit arrangement comprising: a pair of terminals for connection to an alternating current supply; a ballast impedance comprising a capacitance connected between one of said terminals and one of a pair of main discharge electrodes of the lamp; a connection between the other of said terminals and the other of said main electrodes; heating means for at least one of said main electrodes a controllable switching device connected with the lamp to provide a current path between said pair of terminals comprising, in series, said capacitance, said heating means and said switching device; and a voltage breakdown device connected between the control electrode and a main electrode of said switching device; the voltage breakdown device being a reverse breakdown rectifying device so as to provide a unidirectional current conducting path whereby said capacitance charges from said supply while said switching device is open in a sense such as to bias said breakdown device towards breakdown.

4,227,119
CONTROLLED LIGHTING DEVICE

Tomoji Murata, Toyokawa; Kenji Shibazaki, Aichi, and Hideo Ito, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 740,218, Nov. 9, 1976, abandoned. This application Dec. 19, 1978, Ser. No. 970,957
Int. Cl.[3] H05B *37/02;* G03B *27/72*
U.S. Cl. 315—151 4 Claims



1. A controlled lighting device including an illumination lamp, means for supplying an input voltage to the illumination lamp, a light receiving element for detecting an amount of light from the illumination lamp and a control circuit for controlling the input voltage for activating the illumination lamp commensurate with a variation in the amount of light emitted by the illumination lamp and detected by the light receiving element, the controlled lighting device comprising:

a pre-illumination means for illuminating the light receiving element;

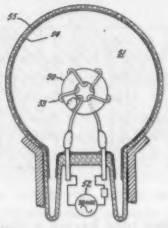
a further control circuit for supplying an input voltage for activating said pre-illumination means at least during the time required for the illumination lamp once activated to reach a predetermined level of illuminescence, said further control circuit including: means for supplying an input voltage to said further control circuit; switching means for disconnecting the input voltage from said further control circuit when the input voltage for the illumination lamp is to be supplied; a condenser for storing an electrical charge until said switching means disconnects the input voltage from said further control circuit; means for discharging said condenser so as to supply another input voltage for said further control circuit at least during the time required for the illumination lamp to reach the desired level of illuminescence;

during the period of operation of said pre-illumination means, said pre-illumination means preventing the input of an excessive voltage from being supplied to the illumination lamp during the time required for the illumination lamp to reach the predetermined level of illuminescence.

4,227,120
STRESS-RELIEVED AMORPHOUS METAL TOROID-SHAPED MAGNETIC CORE

Fred E. Luborsky, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 22, 1978, Ser. No. 944,886
Int. Cl.[3] H05B *41/16, 41/24*
U.S. Cl. 315—248 9 Claims



1. An improved magnetic core comprising a stress-relieved toroid formed from a spirally wound unannealed ribbon of magnetic amorphous metal alloy of the formula: $(Fe_x\text{-}Ni_{100-x})_{100-y}R_y$ wherein R is at least one glass former, x is an integer in the range of from 20 to 35 and y is an integer in the range of from 15 to 25, said toroid being stress-annealed as wound.

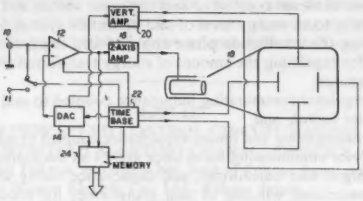
4. In an electrodeless fluorescent lamp means comprising a core; a mass of gaseous medium linking said core and adapted to sustain an electric discharge due to an electric field induced therein by said core and to emit radiation at a first wavelength when sustaining said discharge; a substantially spherical, evacuable light transmissive envelope containing said mass; a luminous phosphor on the surface of said envelope, said phosphor being adapted to emit visible light when excited by said first wavelength radiation; and means for energizing said core with a radio frequency magnetic field whereby said electric field is induced in said mass, the improvement in which said core comprises a stress-relieved toroid formed from a spirally wound unannealed ribbon of magnetic amorphous metal alloy of the formula: $(Fe_xNi_{100-x})_{100-y}R_y$ wherein R is at least one glass former, x is an integer in the range of from 20 to 35 and y is an integer in the range of from 15 to 25, said toroid being stress-annealed as wound.

4,227,121

WAVEFORM OBSERVING METHOD AND APPARATUS

Yasumori Ishijima, Kodaira, and Rikichi Murooka, Komae, both of Japan, assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jul. 7, 1978, Ser. No. 922,927
Claims priority, application Japan, Jul. 7, 1977, 52/81352
Int. Cl.[2] H01J *29/70, 29/72*
U.S. Cl. 315—367 **9 Claims**



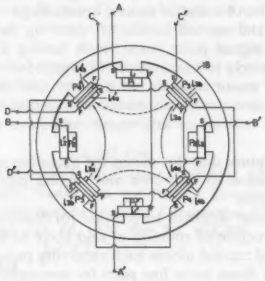
1. A waveform display apparatus, comprising:
a timebase circuit for generating successive ramp signals;
a digital-to-analog converter responsive to said ramp signals for producing an analog output signal, the amplitude of which is proportional to the number of ramp signals received;
a comparator for generating display control signals in response to a comparison of said analog output signal and said display waveform; and
means for displaying said waveform wherein said ramp signals provide deflection along a first display axis, said analog output provides deflection along a second display axis substantially perpendicular to said first display axis, and said display control signals control writing of the display.

4,227,122

CONVERGENCE DEVICE FOR PROJECTION TYPE COLOR TELEVISION SYSTEM

Seiji Fujisawa, Ikoma, and Toshitaka Yukumoto, Ibaraki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jun. 19, 1978, Ser. No. 916,529
Claims priority, application Japan, Jun. 23, 1977, 52-83233[U]
Int. Cl.[2] H01J *29/70, 29/76*
U.S. Cl. 315—368 **3 Claims**



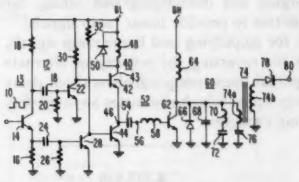
1. A convergence device for the projection type color television system wherein a plurality of primary-color images are projected by respectively different cathode-ray tubes to obtain a color picture on a screen comprising:
a substantially ring-shaped convergence core mounted around a neck of each of said cathode-ray tubes,
eight pole pieces provided on the inner surface of said core, said eight pole pieces being aligned in pairs along a first axis passing through the center of said ring-shaped core, a second axis perpendicularly intersecting with said first axis, and third and fourth axes each dividing into two halves the angle between said first and second axes, said third and fourth axes intersecting perpendiculary with each other,
a first two pairs of windings respectively disposed around a first two pairs of pole pieces (P_1—P_1', P_2—P_2') the axes thereof intersecting perpendicularly, said two pairs of windings being adapted upon excitation to produce magnetic fields respectively in directions along the opposing pole pieces (P_1—P_1') and along the other opposing pole pieces (P_2—P_2'), and
a second two pairs of windings respectively disposed around the remaining second two pairs of pole pieces (P_3—P_3', P_4—P_4'), said second two pairs of windings being adapted when excited with a current flowing therethrough to produce magnetic fields respectively in the directions along said first two pairs of pole pieces (P_1—P_1', P_2—P_2') the axes thereof intersecting perpendicularly, the strength of said two sets of magnetic fields produced by said first two pairs of windings and said second two pairs of windings being controllable independently from each other along the two orthogonal directions, one of said two sets of magnetic fields being controlled by a static convergence control signal, and the other controlled by a dynamic convergence control signal.

4,227,123

SWITCHING AMPLIFIER FOR DRIVING A LOAD THROUGH AN ALTERNATING-CURRENT PATH WITH A CONSTANT-AMPLITUDE, VARYING DUTY CYCLE SIGNAL

Wolfgang F. W. Dietz, New Hope, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,556
Int. Cl.[2] H01J *29/70, 29/76*
U.S. Cl. 315—397 **13 Claims**



1. An amplifier for driving a switch arrangement through an alternating-current path comprising:
first and second controllable switch means, each including a controlled main current conducting path and a control electrode, said main current conducting paths being coupled at a juncture to form a first series arrangement and controlled for conduction during alternate on and off intervals to develop a switching voltage at said juncture inclusive of an AC voltage component of substantially square-wave form and a DC component;
a source of energizing potential;
inductance means serially coupled with said first series arrangement across said source of energizing potential for establishing the magnitude of said switching voltage during said on interval at less than the full potential of said source of energizing potential;
alternating-current coupling means coupled to said juncture and to said switch arrangement for applying to said switch arrangement said AC voltage component to the substantial exclusion of said DC component, the polarity of said AC voltage component during said on interval such as to make said switch arrangement conductive during said on interval; and
means coupled to said inductance means for controlling the

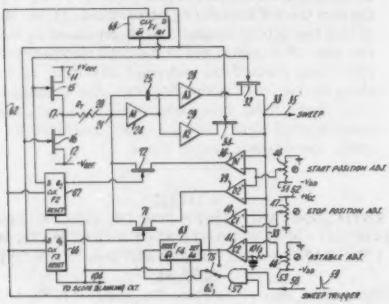
voltage across said inductance means during said off interval to vary the voltage across said inductance means during said on interval in a manner which precludes a decrease in the voltage applied to said switch arrangement during said on interval as the duration of said on interval increases relative to the duration of said off interval.

4,227,124

HIGH DUTY-CYCLE SWEEP GENERATOR FOR A CATHODE RAY OSCILLOSCOPE

Lloyd E. Elliott, Jr., Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Mar. 26, 1979, Ser. No. 24,146
Int. Cl.[2] H01J *29/70, 29/76*
U.S. Cl. 315—408 **8 Claims**



1. High duty-cycle sweep generator for a cathode ray oscilloscope, comprising

an integrator including a timing capacitor and means for charging and discharging said timing capacitor at the same rate to provide linear ramp signals,

means for amplifying said linear ramp signals, and

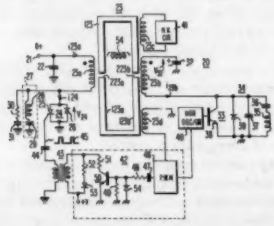
means for reversing the polarity of alternate ones of said amplified linear ramp signals without delay to provide a sweep signal which eliminates any recovery time for said timing capacitor.

4,227,125

REGULATED DEFLECTION SYSTEM

Walter Bohringer, Schlieren, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Mar. 7, 1979, Ser. No. 18,361
Claims priority, application United Kingdom, Sep. 26, 1978, 38145/78
Int. Cl.[2] H01J *29/70*
U.S. Cl. 315—411 **7 Claims**



1. A regulated deflection system, comprising:

a source of unregulated energy;

a regulator switch;

a first winding of a transformer coupled to said source of unregulated energy and to said regulator switch;

a deflection winding;

a trace switch coupled to said deflection winding for developing scanning current in said deflection winding;

a second winding of said transformer coupled to at least one of said deflection winding and said trace switch for transferring energy from said source;

control means coupled to said regulator switch and responsive to an energy level of said deflection system for varying the conduction phase angle of said regulator switch for regulating the amount of energy transferred from said source;

a regulator commutating inductance coupled to said regulator switch; and

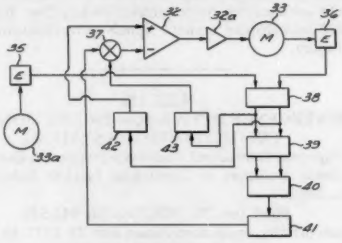
a commutating and tuning capacitance coupled to said regulator commutating inductance and to an associated winding of said transformer, said capacitance tuning with said associated winding of said transformer for transferring energy from said source in a resonant manner, said capacitance forming a resonant regulator commutating circuit for controlling the duration of conduction of said regulator switch.

4,227,126

SHAFT ROTATION INTERLOCK SYSTEM FOR FILM EDITING TABLES AND THE LIKE

Henry M. Denecke, 629 W. Knoll Dr., Los Angeles, Calif. 90069

Filed Feb. 21, 1978, Ser. No. 879,280
Int. Cl.[3] H02P *5/46;* **G05D** *13/62;* **G03B** *31/04*
U.S. Cl. 318—55 **23 Claims**



1. A servo system for interlocking the rotation of a slave motor to that of a master motor, comprising:

(a) first and second means for deriving first and second digital signal pulse trains, each having a characteristic respectively representative of the speed of rotation of said master motor and said slave motor, and each having encoded directional information representative of the direction of rotation of said master and slave motor, respectively;

(b) quadrature decoder means for decoding said directional information to feed first and second pairs of up-down pulse lines;

(c) first order feedback loop means for controlling the speed and direction of rotation of said slave motor comprising first and second means each receiving pulses from one of said up down pulse line pairs for converting each of said first and second digital pulse trains, respectively, to first and second analog voltage signals, and differential amplifier means for combining said analog signals as inputs to produce an error signal output proportional to the sum or difference between said analog signals in the absence of any other signal for controlling the speed and direction of rotation of said slave motor; and

(d) second order feedback loop means connected for controlling the speed and direction of rotation of said slave motor connected in parallel to said first order feedback loop and comprising means including a digital mixer tak-

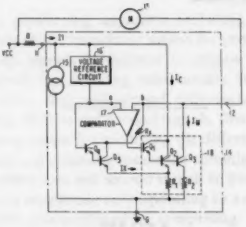
ing its input from said quadrature decoder means and up-down counter means for continuously digitally determining the sum or difference between said characteristic of said first and second digital signal pulse trains and for continuously producing a third digital signal representative of said sum or difference, means for converting said third digital signal to a third analog signal or magnitude proportional thereto, and of polarity determined by said digital mixer, and means for mixing said third analog signal with one of said first or second analog signals to produce a combined input to said differential amplifier means.

4,227,127

MOTOR SPEED CONTROL CIRCUIT HAVING IMPROVED STARTING CHARACTERISTICS

Hirokazu Fukaya, and Jun Kishi, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 20, 1978, Ser. No. 962,256
Claims priority, application Japan, Nov. 21, 1977, 52/138896
Int. Cl.[2] H02P *1/00, 5/16*
U.S. Cl. 318—317 **12 Claims**



1. A combination comprising a first series connection of a motor and a first current source, a second series connection of a resistor and a second current source, said first and second series connections being arranged in parallel, a detector detecting a difference between a first voltage drop across said motor and a second voltage drop across said resistor and generating an output when a difference is detected between said first and second voltage drops, means for changing the currents supplied to said motor and said resistor by said first and second current sources, respectively, in response to said output of said detector, a comparator comprising the difference in said first and second voltage drops with a predetermined voltage value and generating an output when the difference between said first and second voltage drops is larger than said predetermined voltage, and means for enhancing the amount of said currents derived from said first and second current sources in response to said output of said comparator.

4,227,128

SPEED RESPONSIVE MOTOR CONTROL CIRCUIT

James B. Cockroft, Wauwatosa, and Peter J. Ernster, Glendale, both of Wis., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Jun. 16, 1978, Ser. No. 915,977
Int. Cl.[3] H02P *5/08*
U.S. Cl. 318—325 **20 Claims**

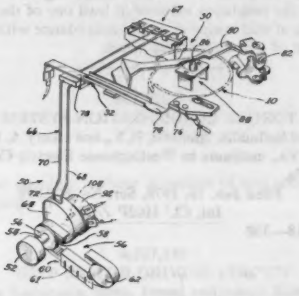
1. A motor control circuit comprising:

mechanical speed sensing means coupled to the motor being controlled for sensing the speed of rotation and for selectively connecting and interrupting a first circuit path as the speed of the motor varies with respect to an adjustable predetermined speed;

power switching means having a control input and adapted to be connected in series with a power source connection and the motor to be controlled for selectively connecting the motor to the power source connections;

manually controlled speed adjustment means connected to said mechanical speed sensing means for selecting said adjustable predetermined speed; and

phase control means having a first variable impedance element, said phase control means being responsive to said manually controlled speed adjustment means and connected to said control input of said power switching means, said manually controlled speed adjustment means adjusting the impedance of said first variable impedance element, said first circuit path provided by said mechanical speed sensing means being connected in series with said phase control means.

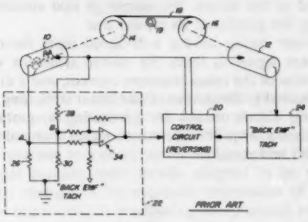


4,227,129

APPARATUS FOR DETECTING THE SPEED OF AN ELECTRIC MOTOR

Steven W. Brooks, Pamona, Calif., assignor to Spin Physics, Inc., San Diego, Calif.

Filed Jan. 29, 1979, Ser. No. 7,288
Int. Cl.[3] H02P *5/16*
U.S. Cl. 318—331 **12 Claims**



1. In cooperation with an electric motor adapted for operation at various speeds, apparatus for determining the instantaneous speed of said motor comprising:

(a) a bridge circuit comprising the armature resistance of said motor and first resistance means in series with said armature resistance to form a first bridge leg, and second and third resistance means in series with each other to form a second bridge leg in parallel with said first bridge leg,

(b) differencing means responsive to the potential at the interconnection of said armature and said first resistance means and at the interconnection of said second and third resistance means to produce a motor speed representative signal corresponding to the difference between said potentials, said first, second, and third resistance means being of such resistance values as to cause said motor speed representative signal to be zero when said motor has zero speed,

(c) means for producing a reference signal corresponding to

the output that said differencing means should have when said motor has a reference speed,

(d) means responsive when said motor has said reference speed for comparing said reference signal with the motor speed representative signal to produce a signal dependent on the difference between such signals, and

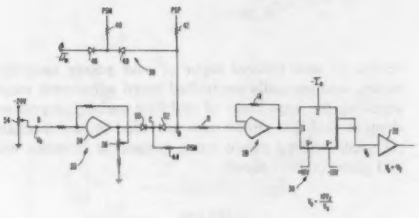
(e) means cooperative with said comparing means for modifying the resistance value of at least one of the resistance means of said bridge circuit in accordance with the signal output of said comprising means.

4,227,130

TORQUE COMPENSATION SYSTEM

Mohammed Safiuddin, Amherst, N.Y., and Henry A. Dickerson, Bristol, Va., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 19, 1978, Ser. No. 870,898
Int. Cl.³ H02P 7/28
U.S. Cl. 318—338 **5 Claims**



1. A torque compensation system for a speed regulated d.c. motor using field weakening for speed control in a production mill comprising:

(a) linear switching means having first and second inputs and an output, the first input receiving a signal ω_m which is a function of the speed of the motor, the second input receiving a signal $\omega_m=1$ which is a function of the rated speed of the motor, the output of said switching means being the greater of its inputs; and

(b) divider means having a dividend input for receiving a current signal I_a from the motor armature which is a function of the rated armature current, and a divisor input connected to the output of said linear switching means and having circuit means for generating a quotient output which is a torque compensation signal V_t equal to I_a for all $\omega_m \leqq 1$ and equal to

$$\frac{I_a}{\omega_m}$$

for all $\omega_m \geqq 1$, and

(c) means for regulating the speed of the d.c. motor in response to a mill speed reference and in response to the signal V_t so as to provide motor torque compensation for control of tension in material being operated upon in the production mill.

4,227,131

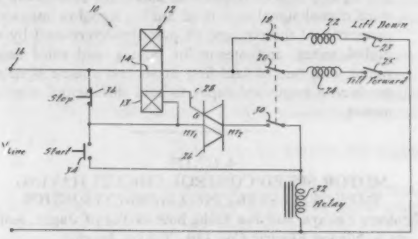
AUTOMATIC RETURN FOR PATIENT CHAIR

Paul G. Thiene, Laguna, Calif., assignor to Surgical Mechanical Research, St. Louis, Mo.

Filed Mar. 19, 1979, Ser. No. 22,203
Int. Cl.³ H02P 3/08
U.S. Cl. 318—467 **10 Claims**

1. A control circuit for a chair having at least one motor for electrically adjusting the position of the chair, which is adapted to automatically return the chair to a predefined position, comprising:

switching circuit means for energizing said motor in response to a start signal, first switch means for deenergizing said motor when the chair has attained said predefined position, and current sensing means for sensing the load current to said motor and producing a first signal in accordance therewith, said switching circuit means being additionally responsive to said first signal for maintaining said motor energized until said motor is deenergized by said first switch means.

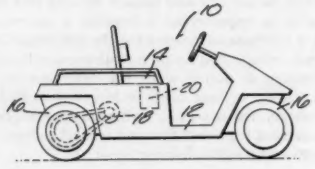


4,227,132

THYRISTOR INTERLOCK AND INDICATOR LIGHT CIRCUIT FOR ELECTRIC VEHICLES

David T. Cavil, Menomonee Falls, Wis., and Gerald N. McAuliffe, Lincoln, Nebr., assignors to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 876,222, Feb. 9, 1978, abandoned. This application Jan. 15, 1979, Ser. No. 3,250
Int. Cl.² B60L 3/00
U.S. Cl. 318—549 **14 Claims**

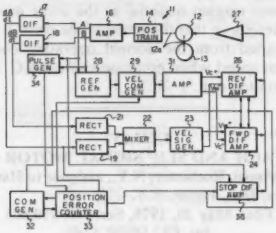


1. A thyristor interlock circuit for energizing a DC motor, which circuit comprises a solenoid switch including an actuating coil, means for connecting said solenoid switch and the motor in series relation between the terminals of a DC source, a thyristor having an anode, a cathode, and a gate, means for connecting said anode to one terminal of the DC source, a first switch, means for connecting said first switch to the one terminal of the DC source and to said gate, a second switch including two terminals, and sub-circuit means for connecting said cathode and said actuating coil in series relation to the other terminal of the DC source, and for connecting one terminal of said second switch to said first switch and said gate, and for connecting the other terminal of said second switch to said cathode and said actuating coil, said sub-circuit means forcing an operator to sequentially close said first switch in order to gate said thyristor and close said second switch in order to energize said actuating coil and the DC motor.

4,227,133
STABILIZED SERVO MOTOR POSITIONING APPARATUS

Tomoatsu Imamura, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 2, 1979, Ser. No. 63
Claims priority, application Japan, Jan. 10, 1978, 53-1241
Int. Cl.[2] G05B *5/01*
U.S. Cl. 318—616 4 Claims



1. A servo positioning apparatus including a servo motor having a rotary shaft, transducer means for producing first and second periodic signals in response to rotation of the shaft, the first and second signals being substantially 90° out of phase with each other, first and second differentiating means for differentiating the first and second signals, first and second full wave rectifying means for rectifying the differentiated first and second signals and summing means for summing the differentiated and rectified first and second signals to produce a velocity signal having a magnitude corresponding to a rotational velocity of the shaft, characterized by comprising:

position command means for generating a position signal having a magnitude corresponding to a difference between a present shaft position and a command shaft position;

reference means for sampling peaks of the first and second signals and producing a reference signal having a magnitude corresponding thereto;

velocity command means for reducing the magnitude of the reference signal in accordance with the magnitude of the position signal to produce a velocity command signal; and

comparator means for comparing the velocity signal with the velocity command signal and producing a motor drive signal corresponding to a difference therebetween, the motor being energized for shaft rotation by the drive signal.

4,227,134
SPINDLE ROTATOR

Lambert Haner, Rocky River, Ohio, assignor to Acme-Cleveland Corporation, Highland Heights, Ohio

Filed Jan. 5, 1979, Ser. No. 1,151
Int. Cl.[2] G05B *19/40*
U.S. Cl. 318—685 20 Claims

1. A machine tool having a motor connectable to rotate a spindle,

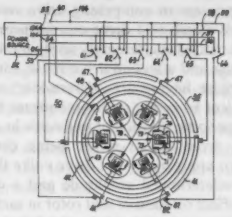
wherein the improvement comprises,

spindle rotational means including,

first and second torque couplings with said first coupling connected between said motor and said spindle to rotate the spindle directly in proportion to the motor speed and said second coupling connected to said spindle to establish a different speed condition of said spindle,

means to partially engage each of said torque couplings for torque transmission therethrough,

and means to control the relative average torque transmission of said first and second torque couplings to rotate said spindle from said motor at a speed slower than rotation of said spindle from said motor by actuation of said first

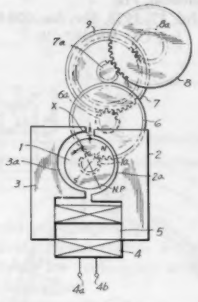


torque coupling without actuation of said second torque coupling.

4,227,135
STEP MOTOR DRIVING CIRCUIT

Yoshikazu Kawamura, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Mar. 1, 1978, Ser. No. 882,516
Int. Cl.[2] G05B *19/40*
U.S. Cl. 318—696 10 Claims



1. In a step motor including a magnetic permeable stator means, a drive coil coupled to said stator means for magnetically orienting said stator means into different magnetic orientations in response to a drive signal being applied thereto, and a permanent magnet rotor means adapted to be rotated in response to changes in the magnetic orientation of the stator means, the improvement comprising drive circuit means coupled to said drive coil, said drive circuit means being disposable into a first mode for alternately applying to said drive coil a first drive pulse and a second drive pulse, each said first and second drive pulse having a duration sufficient to rotate said rotor means by a single step for effecting a periodic rotation of said rotor in a first rotational direction, said drive circuit means being disposable into a second mode for applying to said drive coil a third drive pulse having a duration that is insufficient to effect rotation of said rotor means in a first direction by a single step in response to said third pulse being applied to said drive coil, and a fourth drive pulse immediately after said third drive pulse, said fourth drive pulse having a duration larger than the duration of said third pulse to effect a periodic rotation of said rotor in the other rotational direction, in response to said fourth drive pulse being applied to said drive coil, and mode select means coupled to said drive means for selectively disposing said drive means into one of a first and second mode to thereby select the direction of rotation of said rotor.

10. In a step motor including a magnetic permeable stator means, a drive coil coupled to said stator means for magnetically orienting said stator means into different magnetic orien-

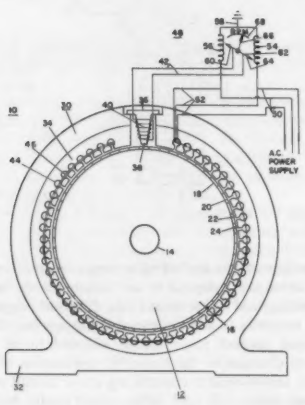
tations in response to a drive signal being applied thereto, and a permanent magnet rotor means adapted to be rotated in response to changes in the magnetic orientation of the stator means, the improvement comprising drive circuit means coupled to said drive coil, said drive circuit means being disposable into a first mode for alternately applying to said drive coil a first drive pulse and a second drive pulse, each said first and second drive pulse having a predetermined amplitude and a duration sufficient to rotate said rotor means by a single step for effecting a periodic rotation of said rotor in a first rotational direction, said drive circuit means being disposable into a second mode for applying to said drive coil a third drive pulse having said predetermined amplitude and a duration that is insufficient to effect rotation of said rotor in said first rotational direction in response to said third pulse being applied to said drive coil and a fourth drive pulse immediately after said third drive pulse, said fourth drive pulse having said predetermined amplitude and a sufficient duration to effect periodic rotation of said rotor in the other rotational direction, and mode select means coupled to said drive means for selectively disposing said drive means into one of a first and second mode to thereby select the duration of rotation of said rotor.

4,227,136

VARIABLE SPEED A.C. MOTOR

John F. Roesel, Jr., Bradenton, Fla., assignor to Precise Power Corporation, Bradenton, Fla.

Filed Jul. 17, 1978, Ser. No. 924,926
Int. Cl.[2] H02P 5/28
U.S. Cl. 318—701 **8 Claims**



1. In a controllably variable speed A.C. motor, in combination,

(a) a rotor comprising a cylindrical body of soft magnetic material of high permeability with a peripheral layer of a magnetizable permanent magnetic material,

(b) an excitation coil energizable with A.C. potential disposed about a relatively stationary magnetic pole member of soft magnetic material, located adjacent to the peripheral layer of magnetizable permanent magnet material, whereby to magnetize the layer of permanent magnet material into a selected configuration of north and south magnetic poles during rotation of the rotor,

(c) a stator comprising a plurality of poles of soft magnetic material of high permeability and windings on the poles energizable with A.C. potential whereby to produce a rotating magnetic field, the plurality of poles being operatively associated with the peripheral layer of permanent magnet material, so that the reaction of the rotating magnetic field with the configuration of north and south magnetic poles of the layer causes the rotor to rotate synchronously therewith in full running speed operation, and

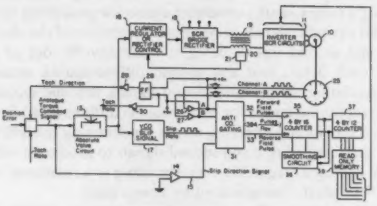
(d) circuit means connectable to a source of A.C. potential for supplying A.C. potential to the windings on the stator and to the excitation coil, said circuit means including controllable phase shifting means in the portion of the circuit leading to the excitation coil, so that phase shifted, single phase A.C. potential can be supplied to the excitation coil to vary selectively the configuration of north and south magnetic poles induced in the layer of magnetizable permanent magnet material as the rotor moves with respect thereto, so that the speed of the rotor is correspondingly varied from the normal operating condition synchronous speed when no phase shifted A.C. is applied to the excitation coil.

4,227,137

DIGITAL TACH AND SLIP SIGNAL MOTOR CONTROL

Peter W. Hartman, Rochester, N.Y., assignor to Hartman Metal Fabricators, Inc., Victor, N.Y.

Filed May 30, 1978, Ser. No. 910,601
Int. Cl.[3] H02P 5/40
U.S. Cl. 318—801 **12 Claims**



1. A digital control circuit for supplying gating signals to the inverter of a current controlling thyristor circuit for the stator winding of a three phase induction motor, comprising

a tachometer coupled to the rotor of said motor and operative to produce two sets of digital tach signals representing the direction of rotation and frequency of said rotor in revolutions per minute,

a command signal source producing digital slip signals respresenting the difference between the rotor frequency and the desired frequency of the stator winding of said motor,

means for algebraically summing said tach and slip signals, and having a multi-bit binary output register the contents of which is cycled at least one per revolution of said rotor, and

decoder mains interposed between said output register and said inverter and operative to convert the binary contents of said register into said gating signals for said inverter.

4,227,138

REVERSIBLE VARIABLE FREQUENCY OSCILLATOR FOR SMOOTH REVERSING OF AC MOTOR DRIVES

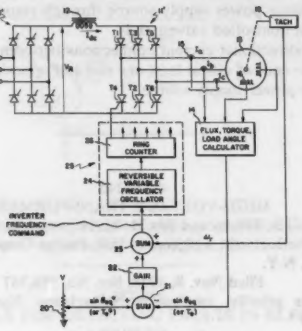
Paul M. Espelage, Ballston Lake, N.Y., and Loren H. Walker, Salem, Va., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 10, 1978, Ser. No. 895,136
Int. Cl.[3] H02P 7/42
U.S. Cl. 318—802 **11 Claims**

1. In a static variable speed reversible ac motor drive including an inverter which supplies adjustable amplitude and adjustable frequency ac power to the motor and has an inverter frequency control circuit that is responsive to an inverter frequency command signal and generates gating pulses for the inverter main thyristors, the improvement wherein said inverter frequency control comprises:

a reversible variable frequency oscillator having as an input a frequency command signal varying in accordance with

the difference in magnitude between a reference value and a sensed machine parameter, said frequency command signal having a substantial ripple component and a dc component whose magnitude and polarity are indicative of the speed and direction of motor rotation;



said oscillator including an integrator and being operative to generate timing pulses and direction signals at a frequency dependent only upon the dc component of the input signal, and

means responsive to said timing pulses and direction signals for generating gating pulses for the inverter main thyristors in the forward and reverse phase sequence.

4,227,139

MOTOR CONTROL ARRANGEMENT

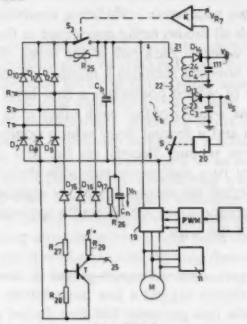
Wilhelmus B. Rosink, and Cornelus P. J. Cox, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 12, 1978, Ser. No. 905,225

Claims priority, application Netherlands, Jun. 20, 1977, 7706751

Int. Cl.[2] H02P *5/40*

U.S. Cl. 318—803 **8 Claims**



1. A motor control circuit for an a.c. motor energized from a source of direct voltage via power switches comprising, a direct voltage source including a rectifier for rectifying an a.c. supply voltage and a smoothing circuit, a frequency control circuit comprising a frequency reference signal input connected to an input of a first amplifier having means for limiting the output signal, means connecting an output of said first amplifier to an input of an integrator, an output of said integrator supplying a frequency control signal to a circuit which controls the power switches and further providing feedback to the input of the first amplifier, a negative current-feedback loop comprising first means for generating a motor current signal which is a measure of the current flowing in the motor and a first comparator for comparing said motor current signal with a reference signal, means connecting an output of said first comparator to the input of the integrator so that the negative current-feedback loop is closed via the first comparator and the integrator when the motor current exceeds a predetermined value, a negative-voltage feedback loop comprising second means for generating a voltage signal which is a measure of the voltage across the direct voltage source and a second comparator for comparing said voltage signal with a reference signal, and means connecting an output of said second comparator to the integrator so that the negative voltage-feedback loop is closed via the second comparator and the integrator when the voltage of the direct voltage source exceeds a predetermined value.

4,227,140

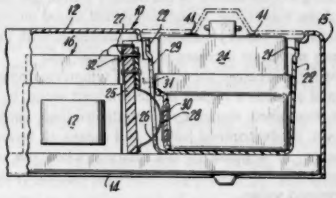
BATTERY CHARGER

Paul C. Nardella, N. Easton; Joseph D. Feeney, Carver; Thomas A. Wrublewski, Braintree, and Anthony W. Gonsalves, Randolph, all of Mass., assignors to Codman & Shurtleff, Inc., Randolph, Mass.

Filed Feb. 16, 1978, Ser. No. 878,494

Int. Cl.[3] H01M *10/46*

U.S. Cl. 320—2 **5 Claims**



1. A battery charger comprising:

a housing having means therein for providing electrical energy suitable for recharging units capable of being electrically recharged,

said housing having at least one energy value indicating meter mounted on an outside surface thereof,

said meter adapted to indicate the recharged level of said unit,

said housing including two cavities therein each arranged to accommodate a unit to be recharged and defined by a bottom, two opposed side walls, and two opposed end walls;

two curved, resilient, electrical contact, leaf springs each having a pronounced arc projecting through one of said end walls into each cavity;

said recharging units having recesses in a side wall thereof aligned with said contact springs;

contact terminals disposed in said recesses of said unit inserted into each cavity and positioned to deflect said contact springs sufficiently to provide good electrical contact therebetween to deliver electrical energy to said unit whereby good electrical contact is provided between said contact springs and said terminals but without placing the entire weight of the units on the contact spring;

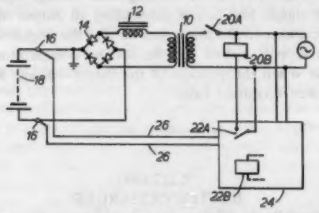
a switch projecting into each cavity activatable by insertion of the unit therein, said switch being separate from and free from direct contact with said electrical contacts but electrically connected to said energy providing means which, in turn, energizes said electrical contacts for recharging the unit upon activation of said switch;

and a pair of covers, one for placement over each of said cavities for protection thereof.

4,227,141
ELECTRIC BATTERY CHARGING APPARATUS

Bryan Cross, Bolton, England, assignor to Chloride Group Limited, London, England

Filed May 31, 1978, Ser. No. 911,169
Claims priority, application United Kingdom, Sep. 13, 1977, 38134/77
Int. Cl.[2] H02J 7/04
U.S. Cl. 320—20 18 Claims



1. Means for terminating the charging of an electric storage battery, or a phase of such a charge, including:

means for producing a battery signal dependent on battery voltage, a progressively increasing ramp signal, and a shiftable bias signal;

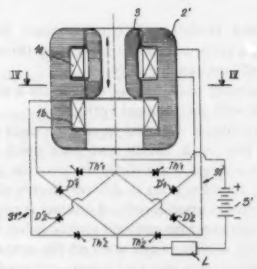
signal combining means producing a combined signal comprising a combination of the battery signal, the ramp signal and the bias signal, which combined signal increases with increase of battery voltage, but decreases with increase of ramp signal, or increase of bias signal; and

means for increasing the bias signal whenever the combined signal exceeds a higher predetermined value, to decrease the combined signal by a predetermined amount to a lower predetermined value, and means to terminate the charge, or a phase of the charge, when the combined signal falls below a value lower than the said lower predetermined value.

4,227,142
PULSED EXCITATION ALTERNATOR

Jacques H. Jarret, 11 rue des Chenes, Le Vesinet, Yvelines, and Jean M. B. Jarret, La Champanelle, Chemin du Clos Baron, Fourqueux, Yvelines, both of France

Continuation of Ser. No. 693,646, Jun. 7, 1976, abandoned. This application Sep. 15, 1978, Ser. No. 942,862
Claims priority, application France, Jun. 9, 1975, 75 17905
Int. Cl.[3] H02K 35/00; H02P 9/00
U.S. Cl. 322—3 11 Claims



1. In an alternator having at least one coil surrounded by an iron magnetic circuit for picking up electrical power from the alternator and having two ends, the coil cooperating with a magnetic moving part of iron cyclically displaced between two positions to form a gap having a size dependent on instant position of the moving part, the improvement comprising:

a substantially constant voltage power supply source having a positive and a negative terminal;

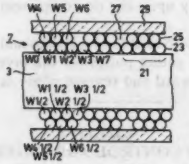
two controlled valves, said two ends of said at least one coil being respectively connected to said positive terminal and to said negative terminal of said substantially constant voltage power supply source through respective ones of said controlled valves; and

monodirectional current connections between each of said two ends of said at least one coil and opposite terminal of the power supply source.

4,227,143
HIGH-VOLTAGE TRANSFORMER

Marius J. A. Elders, and Jan H. M. Hopmans, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 8, 1978, Ser. No. 958,767
Claims priority, application Netherlands, Nov. 29, 1977, 7713118
Int. Cl.[2] G05F 7/00
U.S. Cl. 323—48 8 Claims



1. A high voltage transformer, comprising a ferromagnetic core, at least one primary winding and one secondary winding disposed on said core with said secondary winding comprising a series of wire-wound coils, each of which is wound on the preceding coil and is separated therefrom by an insulating layer, every two successive coils being electrically connected by a diode with all diodes being connected in the same rectifying sense, and wherein each coil of the series of coils forming the secondary winding includes a number of series-connected sub-coils each of which comprises a first layer comprising a number of turns which contact each other over at least a part of their length and a second layer which comprises a smaller number of turns wound directly on the first layer, the first layers of every two successive sub-coils directly contacting each other whereas the second layers are separated from each other by a clearance space whose width approximately equals the thickness of the wire.

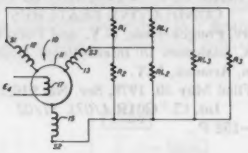
4,227,144
ERROR COMPENSATION OF SYNCHRO CONTROL TRANSMITTERS

Charles W. Lang, Wayne, and Thomas Beneventano, Washington Township, Burlington County, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Jan. 16, 1979, Ser. No. 3,831
Int. Cl.[3] H02K 24/00
U.S. Cl. 323—121 8 Claims

5. A compensated synchro transmitter comprising a synchro transmitter having a rotor winding and three Y-connected stator windings having outputs S1, S2 and S3 and first and second resistors across two selected pairs of said terminals, said resistors having values such that when placed across said selected pairs of said terminals such that they generate an

unbalanced second harmonic load error which has a phase and magnitude approximately opposite to the second harmonic



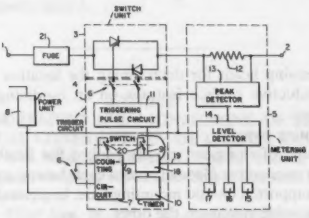
error in said synchro, thereby correcting said second harmonic error to improve the accuracy of said synchro.

4,227,145

APPARATUS FOR DETECTING FAULTS IN ELECTRIC CABLES

Zbigniew Bonikowski, Iver; Suhas Ghanashyamkulkarni, and Anthony A. Briant, both of London, all of England, assignors to BICC Limited, London, England

Filed Oct. 19, 1977, Ser. No. 825,227
Int. Cl.[3] G01R *31/02*; H02H *3/093*
U.S. Cl. 324—51 **15 Claims**



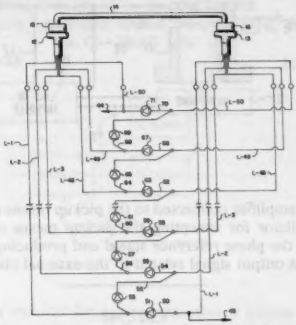
1. For use in combination with an electric power distribution cable and the normal source of voltage supply to said cable, the cable being connected between said normal source of voltage supply and at least one load normally applied to said cable, apparatus for use in selectively detecting faults in said electric power cable, which apparatus comprises a solid state switch unit comprising two thyristors arranged in an inverse-parallel configuration and continuously conducting current up to a pre-set maximum and becoming non-conductive after conducting a current in excess of the pre-set maximum for a pre-set period, a metering unit connected to said solid state switch unit for indicating the size of a current flowing through said cable, said metering unit including means for measuring the current in the solid state switch unit, and a trigger circuit connected to said solid state switch unit and metering unit which includes a manually operated trigger switch so connection to said solid state switch unit that when the trigger switch is actuated the trigger circuit will render the switch unit conductive, period measuring means connected to said solid state switch unit maintaining said switch unit conductive for said pre-set period, said apparatus in use being connected in series between said cable and said normal source of voltage supply to the cable when said cable is on load, whereby the trigger circuit will maintain said switch unit electrically conductive for a pre-set period long enough to allow the metering unit to indicate the size of the current flowing through said cable and hence the existence or otherwise of a fault in said cable but not long enough for said current to damage the apparatus, the cable under test and the normal source of voltage supply to the cable.

4,227,146

CABLE TESTER FOR LOCATING SHORTS DISCONTINUITIES AND REVERSALS IN MULTI-CONDUCTOR CABLES

Stephen L. Hodge, 306 Thompson St., Richardson, Tex. 75080

Filed Oct. 24, 1978, Ser. No. 954,224
Int. Cl.[2] G01R *31/02*
U.S. Cl. 324—51 **10 Claims**



1. A cable tester for a multi-conductor cable comprising a substantially constant-current power supply;

connector means for connecting at least one end of said cable to said tester;

circuit means for connecting all of the conductors of said cable in series with one another to form a circuit across said power supply;

said circuit means including a plurality of "open" detector lines, one connected in parallel with each cable conductor, each of said "open" detector lines having a substantially higher resistance than the cable conductor with which it is connected in parallel, each of said "open" detector lines having therein a light source activatable upon the occurrence of an "open" in its associated cable conductor;

said circuit means further including a plurality of "short" detector lines, one connected in series between each cable conductor and the next adjacent cable conductor each of said "short" detector lines having therein a light source activatable in the absence of a "short" in its associated cable conductor; and

said "open" detector light sources and said "short" detector light sources being arranged in a display in a seclected pattern with both of the light sources associated with a given cable conductor in predetermined spaced relationship to each other.

4,227,147

ELECTROMECHANICAL PARAMETRIC AMPLIFIER FOR MEASUREMENT OF ELECTRIC FIELDS

Gabriel L. Miller, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 16, 1978, Ser. No. 951,753
Int. Cl.[2] G01R *31/02*
U.S. Cl. 324—72 **12 Claims**

1. Apparatus for the measurement of an external electric field comprising

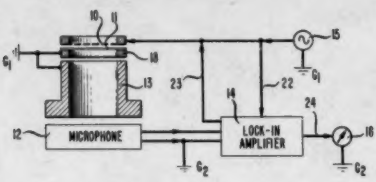
(a) an electrically conducting partition, at least partially transparent to the external electric field;

(b) a local oscillator electrically connected to the partition, for imposing an electrical drive signal on the partition at a drive frequency and for producing a phase reference signal;

(c) an electrically conducting broad member whose edge is supported in a fixed position adjacent to the partition which said broad member is capacitively coupled to the partition and exposed to the external electric field

whereby the broad member is so situated as to experience a drive signal electrical force from the partition and an external elecrical force;

(d) pickup means for sensing the amplitude of the motion of the broad member at the drive frequency, which amplitude is directly related to the external electric field; and



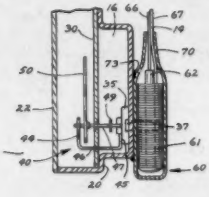
(e) an amplifier connected to the pickup means and the local oscillator for accepting the pickup means output signal and the phase reference signal and producing a measurement output signal related to the external electric field.

4,227,148

EXTERNAL MEANS FOR INCREASING THE SENSITIVITY OF A MOVING MAGNET TYPE OF METER

Leonard S. Smith, Eden Prairie, Minn., assignor to Century Mfg. Co., Minneapolis, Minn.

Filed Aug. 10, 1978, Ser. No. 932,562
Int. Cl.³ G01R *15/08, 1/38, 5/16*
U.S. Cl. 324—115 **4 Claims**



1. External means influencing the basic movement of a DC ampere reading meter, having in combination

a conventional DC ampere reading meter including a housing having mounted therein a moving magnet, a scale and a needle caused by said magnet to be moved to indicate a scale reading, a switch in series with said meter

a current source in circuit with said series connected switch and meter,

the improvement herein comprises

a coil member,

means mounting said coil member upon said housing externally thereof,

said coil member including

a soft iron core and

a coil of appropriate windings about said core and connected across the series combination of said switch and meter,

said current source being in circuit with said coil member and by-passing said meter with said switch in open position,

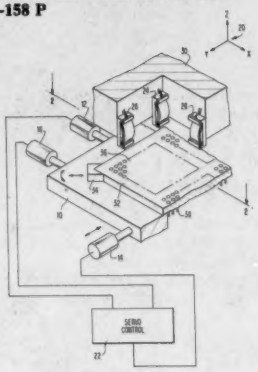
the position of said coil member on said housing and the winding of said coil about said core being such that said current source energizes said coil member and creates a magnetic force field with magnetic coupling lines influencing said moving magnet to cause said needle to move such as to give a full scale reading to a current value which is less than the current value otherwise required for the basic movement of said meter with said switch in closed position the resistance of the coil being of such greater magnitude than the meter resistance that the current drawn by said coil causes no significant influence on the moving magnet with the switch in said closed position.

4,227,149

SENSING PROBE FOR DETERMINING LOCATION OF CONDUCTIVE FEATURES

Louis H. Faure, Poughkeepsie, N.Y., and Philo B. Hodge, Roxbury, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 30, 1978, Ser. No. 910,253
Int. Cl.³ G01R *1/073, 31/02*
U.S. Cl. 324—158 P **7 Claims**



5. A sensing heads for determining the location of electrically conductive surface features on an insulating substrate comprising:

a mounting base,

a plurality of elongated closely packed flat flexible electrically conductive blade elements each having a major axis and supported on said mounting base, in generally parallel relationship one upon the other,

insulation means to electrically insulate said adjacent blade elements from each other, end portions on said blade elements that terminate in a plane generally perpendicular to the major axis of said blade elements for making contact with the conductive surface features on said insulating substrate,

means on said mounting base to hold said blade elements in a slightly bowed position, such that each successive element has a greater bow, said bowed position of said blade elements permitting retraction of individual blade elements without affecting adjacent unretracted blade elements to permit independent limited movement of the contact portions of said individual blade elements.

4,227,150

SYSTEM FOR INDICATING MEASURED VALUES

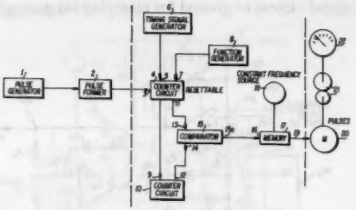
Gerhard Widl, Michelstadt, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG

Filed Jul. 6, 1978, Ser. No. 922,485
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1977, 2730699
Int. Cl.² G01P *3/36*
U.S. Cl. 324—175 **11 Claims**

1. A speed indicating system comprising: electric sensor means for generating electric pulses with a frequency proportional to the value of a measured speed;

first and second counter means connected with the sensor means and with each other for counting the number of said generated pulses in first and second equivalent periods of time, as determined by timer means for enabling the

counter means for said periods of time, the periods following one after each other; comparator means coupled to the output of both said counter means for comparing the number of counted pulses in the counter means and delivering a pulsed signal representative of the difference and the direction of said difference of said pulses; storing means connected with the comparator means for storing said signal representative of the pulse difference; a single



stepping motor drivable in two directions and connected with the storing means to receive stored signals therefrom and operated in an appropriate one of said directions depending upon said stored signals representative of the pulse difference; and an indicator element being fastened on the axis of said stepping motor giving speed informations analogous to its angle deflection upon operation of the stepping motor.

4,227,151

MEASUREMENT AND MONITORING OF THE ELECTRICAL CONDUCTIVITY OF LIQUOR SAMPLES

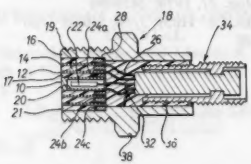
Christopher I. A. Ellis, and Edward L. Naylor, both of Birkenhead, England, assignors to Malcom-Ellis (Liverpool) Limited, Liverpool, England

Filed Aug. 28, 1978, Ser. No. 937,175

Claims priority, application United Kingdom, Aug. 27, 1977, 36088/77

Int. Cl.[2] G01N *27/42*

U.S. Cl. 324—448 **10 Claims**



1. A measuring cell for use in measuring and monitoring the electrical conductivity of a liquid, comprising at least four concentric circular electrodes disposed in a surface and mutually separated by annular areas of electrically non-conductive material, said surface being flat and being supported by a main body portion of the cell, the body portion being adapted to be mounted in a vessel or machine for presenting said surface, and hence the concentric electrodes, to a liquid under test, the body portion being tubular and defining the outer one of said concentric electrodes, the inner electrodes being respectively defined by one end of each of a plurality of cylindrical metallic members coaxially disposed within the tubular body portion and mutually spaced apart by tubular spacers of electrically non-conductive material, and the central, inner electrode being hollow to receive a temperature sensitive element.

4,227,152

METHOD AND DEVICE FOR TRAINING AN ADAPTIVE EQUALIZER BY MEANS OF AN UNKNOWN DATA SIGNAL IN A QUADRATURE AMPLITUDE MODULATION TRANSMISSION SYSTEM

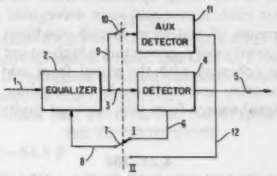
Dominique N. Godard, Le Rouret, and Philippe E. Thirion, St-Paul-de-Vene, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 23, 1979, Ser. No. 41,585

Claims priority, application France, Jun. 13, 1978, 78 18478

Int. Cl.[3] H04B *3/06*

U.S. Cl. 375—13 **10 Claims**



1. In a data receiver for a data transmission system using a QAM technique, of the type wherein the received signal is, in particular, equalized by an adaptive equalizer and then fed as an input signal to a data detection device which supplies the detected data after comparing said input signal with a first constellation, a method of training said equalizer, characterized in that it includes the steps of:

a. comparing said input signal with a second constellation comprising fewer points than said first constellation;

b. selecting that point of said second constellation which is nearest the point representative of said input signal;

c. determining an error signal which is a function of the distance between the point representative of said input signal and the point of said second constellation selected during step b.; and

d. deriving from said error signal control signals serving to adjust the coefficients of the equalizer.

4,227,153

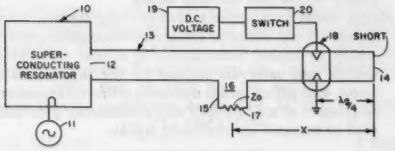
PULSE GENERATOR UTILIZING SUPERCONDUCTING APPARATUS

Daniel L. Birx, Santa Barbara, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 26, 1978, Ser. No. 928,218

Int. Cl.[2] H03K *3/55, 5/12;* H01P *7/06;* H01J *17/64*

U.S. Cl. 328—59 **2 Claims**



1. Apparatus for generating high power microwave pulses that have extremely fast rise times and are phase coherent with the signal from a microwave signal source, comprising in combination

a superconducting cavity resonator;

means for coupling a low power microwave signal source to said cavity resonator to charge it to a high energy level, the frequency of said signal source corresponding to the resonant frequency of said cavity resonator;

a main waveguide section having one end thereof coupled to

said cavity and the other end thereof terminating in a short circuit;

a branch waveguide section connected at one end to said main waveguide section at a location which is an even multiple of $\lambda g/4$ away from said short circuit, where λg is the wavelength of said microwave signal;

a load connected to the other end of said branch waveguide section and;

means for establishing at a particular time a short circuit condition across said main waveguide section at a location $\lambda g/4$ from said short circuit,

the coupling between said mircowave signal source and said resonant cavity being optimized when no short circuit condition exists across said main waveguide section,

the occurrence of said short circuit condition discharging said resonant cavity, generating a high power pulse which is phase coherent with the signal from said microwave signal source, and additionally decoupling said microwave signal source from said resonant cavity.

4,227,154

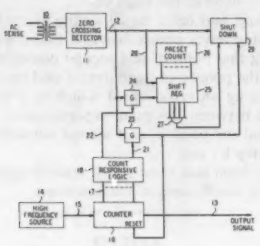
FREQUENCY GENERATOR WITH A CONTROLLED LIMIT ON FREQUENCY DEVIATION FROM A SYNCHRONIZING FREQUENCY

Harry K. Ebert, Jr., Hackettstown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 23, 1978, Ser. No. 953,428

Int. Cl.³ H03L *7/00*

U.S. Cl. 328—141 **7 Claims**



1. A frequency deviation detector for monitoring synchronism of a first and second periodic signal, comprising

dividing means for accepting a high frequency signal source and deriving a first periodic signal;

logic means for responding to preselected count states of said dividing means, said logic means including a coincidence gate responsive to a sequence of count digits less than a highest and more than a lowest order digit contained within said dividing means

gating means for accepting zero crossing signals responsive to said second periodic signal and responsive to said logic means to enable transmission of a zero crossing signal during time intervals defined by the preselected count states, said gating means including a first transmission gate responsive to an output of said coincidence gate and coupled to transmit zero crossing signals.

4,227,155

AMPLIFIER WITH DARK CURRENT COMPENSATION

Jesse P. Lerma, La Habra, Calif., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Aug. 14, 1978, Ser. No. 933,311

Claims priority, application United Kingdom, May 31, 1978, 25100/78

Int. Cl.³ H03F *21/00*

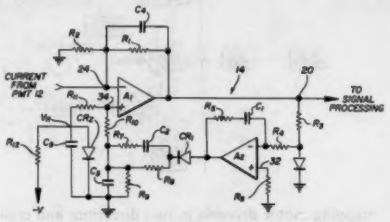
U.S. Cl. 330—11 **6 Claims**

1. In a pre-amplifier for multilevel, pulsed electrical signals, said signals having a direct current signal component in the presence of noise and undulating between levels with respect to ground, wherein the improvement comprises:

a feedback amplifier coupled to said signal at the output of said pre-amplifier to monitor said pre-amplifier output;

a compensating circuit coupled intermediate said feedback amplifier and said pre-amplifier input;

said feedback amplifier and said compensating circuit including means for enabling said feedback amplifier to monitor said pre-amplifier output and to operate in a linearly responsive state during levels of said multi-level, pulsed signal closest to ground for clamping the average value of



said noise to ground, thereby restoring optimum ground to said output signal;

said compensating circuit including a capacitor,

means for charging said capacitor through said feedback amplifier during its linearly responsive state to transfer a compensating charged voltage level to said pre-amplifier input sufficient to compensate for the average value of said noise with respect to ground, and

saturation means coupled to said feedback amplifier for enabling said feedback amplifier to saturate during other levels of said multi-level, pulsed signal and thereby cease monitoring of said pre-amplifier output.

4,227,156

CIRCUIT FOR AT LEAST TWO FREQUENCIES

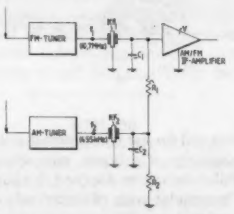
Johann Mattfeld, Flein, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 15, 1978, Ser. No. 960,785

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1977, 2753578; Jun. 27, 1978, 2828090

Int. Cl.² H03F *3/68;* **H04B** *1/06*

U.S. Cl. 330—126 **11 Claims**



1. A circuit which is operated alternately with at least two frequencies through a common connection, and using filters, characterized in that the filters are ceramic; that two terminating resistors, each connected to a filter, are connected in series with the lower frequency filter connected to the connection point between the two resistors, and the higher frequency filter connected to the lower value resistor of said two resistors and is connected directly to the common circuit connection for both frequencies; and that the order of magnitude of said resis-

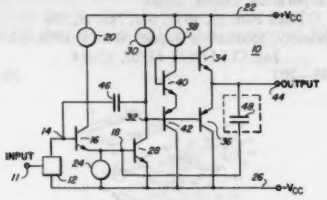
tors corresponds to the order of magnitude of the required terminating resistance required for the ceramic filters.

4,227,157

FREQUENCY COMPENSATED HIGH FREQUENCY AMPLIFIERS

Robert B. Davies, and Don W. Zobel, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 5, 1979, Ser. No. 1,088
Int. Cl.[2] H03F 3/213
U.S. Cl. 330—265 **8 Claims**



1. A frequency compensated high frequency amplifier, including in combination:

a first gain stage;

a second gain stage having a first high impedance node coupled to said first gain stage, a second high impedance node, non-inverting amplifier means electrically connected between said first and second high impedance nodes, a third high impedance node, inverting amplifier means having an input terminal coupled to said second high impedance node for receiving signals therefrom, said inverting amplifier means havig an output terminal connected to said third high impedance node for applying such signals to said third high impedance node after inverting such signals, the impedances at said first, second and third high impedance nodes being a function of frequency and said second high impedance node having a lower impedance at a given frequency than the impedances at said first and third high impedance nodes;

first frequency compensating capacitive means coupled between said first and third high impedance nodes; and

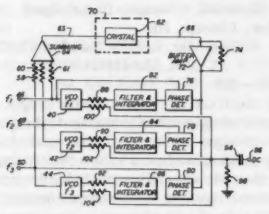
second frequency compensating capacitive means coupled between said third and second high impedance nodes.

4,227,158

MULTIFREQUENCY CONTROL FROM A SINGLE CRYSTAL

George F. Schroeder, Wayne, and Lincoln S. Ferriss, Lincoln Park, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Feb. 1, 1979, Ser. No. 8,459
Int. Cl.[3] H03L 7/02
U.S. Cl. 331—2 **7 Claims**



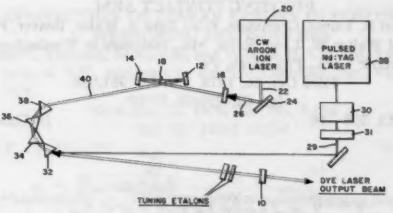
1. A circuit for regulating the output frequencies of a number of voltage controlled oscillators including a crystal capable of simultaneous vibration in more than one mode at different frequencies, the crystal being connected between the output of a summing amplifier and the input of a buffer amplifier, a number of voltage controlled oscillators each being supplied with a variable DC voltage for controlling its frequency, the outputs of the voltage controlled oscillators being supplied to the summing amplifier, and a phase detector associated with each oscillator for receiving the output of each voltage controlled oscillator and the output of the buffer amplifier for the purpose of generating a DC voltage proportional to the phase difference between the output of the oscillator and the buffer amplifier and supplying it to the associated oscillator to control its frequency.

4,227,159

COMMON-RESONATOR PRE-LOCKED LASER

Joseph J. Barrett, Morris Plains, and Otis G. Peterson, Dover, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jan. 24, 1978, Ser. No. 871,913
Int. Cl.[2] H01S 3/091
U.S. Cl. 331—94.5 P **27 Claims**



1. A common resonator pre-locked laser comprising an optical resonator resonant at a given wavelength; an active medium having an emission band coincident with said wavelength placed in the resonator; first pumping means for pumping the full extent of said active medium with relatively low power optical radiation within a corresponding absorption band of said active medium to produce a population inversion of optically excitable states within said emission band for generating stimulated emission of radiation; and

second pumping means for pumping the full extent of said active medium with relatively high power optical radiation within said absorption band to generate strong laser radiation at said wavelength in the active medium;

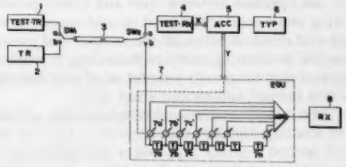
said resonator including means for coupling radiation of said wavelength out of said resonator.

4,227,160

TRANSVERSAL TYPE AUTOMATIC EQUALIZER

Michitoshi Tamori; Katsuhiko Furuya, both of Tokyo; Hidetaka Yanagidaira, Omiya, and Hiroshi Sakaki, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1978, Ser. No. 969,364
Claims priority, application Japan, Dec. 26, 1977, 52-155612
Int. Cl.[3] H04B 3/04
U.S. Cl. 333—18 **3 Claims**



1. A tranversal type automatic equalizer comprising a tran-

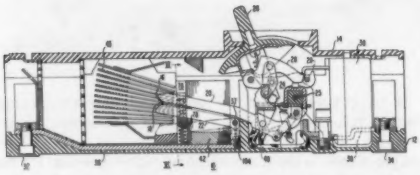
versal filter having a plurality of taps separated by time delay intervals, said transversal filter receiving input signals from a transmission line, a plurality of potentiometers being connected to each of said taps to provide a tap weight and the outputs of the potentiometers being summed up to provide an equalized output signal, means for measuring the amplitude characteristic on a logarithmic scale of the transmission line, means coupled to the measuring means for providing an inverse characteristic of said amplitude characteristic, a memory storing the elements of a predetermined matrix, a multiplier for providing the product of said inverse characteristic and the output of said memory to provide a series of cosine equalization components, a modified Bessel function generator for providing discrete time sequence signals in accordance with the output of said multiplier, means for performing a convolution integration to the output of said modified Bessel function generator, and means for applying the result of the convolution integration to said potentiometers to adjust the tap weights of the transversal filter.

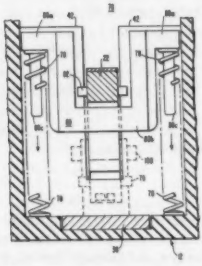
4,227,161

CURRENT LIMITING CIRCUIT BREAKER WITH PIVOTING CONTACT ARM

Miguel B. Yamat, Greendale, Wis.; John A. Wafer, Beaver, Pa., and Walter W. Lang, Rolla, Mo., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 16, 1978, Ser. No. 951,938
Int. Cl.[3] H01H *77/10*
U.S. Cl. 335—16 **10 Claims**





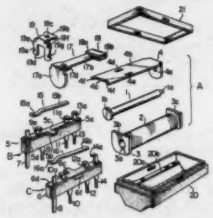
1. A circuit interrupter, comprising:
separable contacts;
an arm assembly comprising first and second pivoting contact support arms supporting said contacts at the ends thereof and operable between open and closed positions;
an operating mechanism connected to said second arm for moving said contacts between open and closed positions;
a passive arm positioning member extending through said first contact support arm to limit travel of said first arm in a direction toward said second arm;
an active arm positioning assembly comprising a bearing member abutting said first contact arm on the side opposite said second contact arm and a spring biasing said bearing member against said first arm in a direction toward said second arm; and
conductor means connected to said contact support arms adapted to connect said circuit interrupter in series with an electrical circuit being protected, said conductor means so arranged that current flow through said contact support arms is in opposite directions.

4,227,162

ELECTROMAGNET RELAY WITH SPECIFIC HOUSING STRUCTURE

Teizo Fujita, Ibaraki; Toyokazu Ikebata, Amagasaki, and Harumi Fujisato, Takaishi, all of Japan, assignors to Izumi Denki Corporation, Osaka, Japan

Filed Feb. 28, 1979, Ser. No. 16,704
Claims priority, application Japan, Mar. 8, 1978, 53-27069
Int. Cl.[2] H01H *45/02, 45/14*
U.S. Cl. 335—202 **30 Claims**



1. An electromagnet relay comprising:
A. at least one electromagnet relay-contact assembly including
(i) relay contact means including at least one of a normally-open relay contact and a normally-closed relay contact,
(ii) electromagnet means including an elongated iron core, a coil wound on said iron core, and a relay armature actuated by the energization of said coil to actuate said relay contact means, and
(iii) a plurality of lead-out terminals for said relay contact means and said coil; and
B. a housing including an upper wall, side walls and a bottom wall for containing said relay-contact assembly in the inner space defined by said upper, side and bottom walls, said bottom wall having a downwardly-protruded expansion extending longitudinally substantially over the entire length of the outer surface of said bottom wall and a plurality of flat portions connected with and extending along said expansion, said lead-out terminals being led out of said housing through said bottom wall at least at one of said flat portions.

4,227,163

ELECTRICAL KEYSWITCH

Raymond Barnoski, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 5, 1979, Ser. No. 17,875
Int. Cl.[3] H01H *9/00*
U.S. Cl. 335—205 **4 Claims**

1. In an electrical keyswitch comprising a base having a vertically extending guide chamber and a horizontal surface, a depressible plunger mounted for up and down movement within said guide chamber, a return bias spring positioned in said guide chamber so as to bias said plunger upwardly toward its undepressed position, a permanent magnet carried externally on one side of said plunger so as to move up and down therewith, a closed-saturable magnetic core, a U-shaped drive line having two substantially straight parallel legs that has one of said legs located in the loop of said core with an adjoining strip of said drive line running between its two legs and being located above said core and a U-shaped, sense line having two substantially straight parallel legs that has one of said legs

located in the loop of said core so as to run parallel to the leg of said drive line that is located in said loop with a joining strip of said sense line running between its two legs and being located above said core, wherein said permanent magnet is positioned adjacent said core when said plunger is not depressed so that said core is substantially magnetically saturated, and so that said permanent magnet moves away from said core when said plunger is depressed, thereby allowing said core to come out of magnetic saturation; the movement comprising a plurality of electrically insulating, elongated, parallel dividers that are integrally formed on said base and are located below said horizontal surface in the interior of said base adjacent the side of said base that is adjacent said permanent magnet so that said dividers in conjunction with said base provide four separate

elongated passageways and a pair of walls that extend vertically upward from said horizontal surface that are shaped to form a retaining well for said core so that the bottom of said core rests on said horizontal surface and the top of said core is uncovered and the axis of said core is vertically oriented, said walls each having a groove therein, one of said grooves positioned to allow said drive line to pass therethrough and the other of said grooves positioned to allow said sense line to pass therethrough, said horizontal surface having a slot therein which allows both of said drive and sense lines to pass therethrough, with each of said legs of said drive and sense lines being confined to operate in one of said passageways that are provided by said dividers so that the lower ends of said legs extend out of the bottom of in said base at different, electrically insulated locations, said passageways.

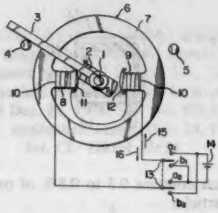
4,227,164

ELECTROMAGNETIC ROTATING APPARATUS

Haruo Kitahara, Ijima, Japan, assignor to Shinano Tokki Corporation, Japan

Filed May 22, 1978, Ser. No. 908,250
Claims priority, application Japan, Aug. 20, 1977, 52/99725
Int. Cl.[2] H01F *7/00*
U.S. Cl. 335—230 **4 Claims**

1. Electromagnetic rotating apparatus comprising a rotating shaft, a bi-polar permanent magnet fixed to said rotating shaft and radially magnetized, a non-magnetic insulating fixed core having a plurality of axially extending slots formed in the outer peripheral surface of a hollow cylinder which embraces rotating side and peripheral surfaces of said permanent magnet, a fixed solenoid coil wound around said core so as to surround said permanent magnet, a holding soft magnetic segment fixed to both opposite end portions of said outer peripheral surface of said fixed coil so as to close the open ends of said fixed coil, an energizing circuit to selectively energize said fixed coil positively or inversely, and first and second stoppers to limit the rotating of said permanent magnet within an angular range



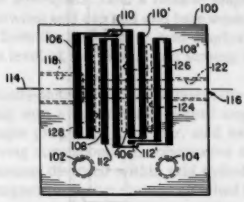
of less than 180 degrees and make maximum the magnetic flux interlinking with said fixed coil.

4,227,165

CORRECTION OF LINEAR ERRORS IN POSITION MEASURING TRANSDUCERS

Clair L. Farrand, Bronxville, and William H. Clifford, Yonkers, both of N.Y., assignors to Farrand Industies, Inc., Valhalla, N.Y.

Filed Jan. 22, 1979, Ser. No. 5,116
Int. Cl.[3] H01F *21/04*
U.S. Cl. 336—20 **1 Claim**



1. A member of a position measuring transducer, said member being adapted for use with a transducer having two mutually spaced, relatively movable members with electrically coupled elements, said member comprising:

a base having a plurality of electrically coupling element circuits affixed to one surface thereof, said circuits being spaced from each other by a predetermined initial spacing distance, said circuits further having a common longitudinal axis; wherein said base has at least one cutout portion transverse to said axis between said circuits;

said base having an aperture therein parallel to said longitudinal axis; and

means for insertion in said aperture for changing the spacing distance between said circuits.

4,227,166

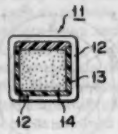
REACTOR

Toshihiko Tsuji, and Riyouji Sakai, both of Tokyo, Japan, assignors to Nippon Kinzoku Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1978, Ser. No. 913,193
Claims priority, application Japan, Jun. 8, 1977, 52/67650
Int. Cl.[2] H01F *27/24*
U.S. Cl. 336—229 **5 Claims**

1. A reactor comprising an annular iron core constituting a closed magnetic path and a conductor wound on the annular

core, said iron core being formed of particles of iron or an iron-based magnetic material each covered with an insulative



oxide film which contains 0.3 to 0.8% of oxygen by weight based on the particle.

4,227,167

HIGH-INTERRUPTING CAPACITY FUSE

Frederick J. Kozacka, South Hampton, N.H., and Howard G. Wilks, Newbury, Mass., assignors to Gould Inc., Rolling Meadows, Ill.

Filed May 16, 1979, Ser. No. 39,621

Int. Cl.³ H01H *85/12*

U.S. Cl. 337—161 **12 Claims**

1. An electric high-interrupting capacity fuse complying with Underwriters Laboratories Inc. Standard for Class L fuses, said fuse comprising a casing of electric insulating material, a pulverulent arc-quenching filler including particles of quartz inside said casing, and a pair of terminal elements closing said casing on the ends thereof, and said fuse further comprising

(a) a plurality of fusible elements conductively interconnecting said pair of terminal elements, all of said plurality of fusible elements being of copper to the exclusion of any fusible element of silver;

(b) each of said plurality of fusible elements having a plurality of identical, serially related regions of reduced cross-section, each of said regions being formed by a rectangular perforation extending transversely across said plurality of fusible elements having almost the same width as each of said plurality of fusible elements and defining a pair of parallel current paths each being substantially point shaped and located at one of the two narrow sides of said rectangular perforation;

(c) each of said plurality of fusible elements including one pair of said parallel current paths that is situated immediately adjacent to the center thereof where the highest temperature prevails when the fuse is carrying current; and

(d) a plurality of M-effect causing overlays of a metal having a considerably lower fusing point than copper, each of said plurality of overlays extending transversely across the entire width of each of said plurality of fusible elements, each of said plurality of overlays, as long as in the solid state, being arranged immediately adjacent to, but in spaced relation from, said one pair of parallel current paths where the highest temperature prevails when said fuse is carrying current, and said plurality of overlays, when liquefied, flowing from the initial locations thereof toward said one pair of parallel current paths where the highest temperature prevails when said fuse is carrying current.

4,227,168

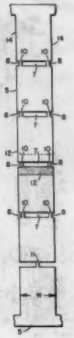
FUSIBLE ELEMENT FOR ELECTRIC FUSES BASED ON M-EFFECT

Edward J. Knapp, Jr., Salisbury, Mass., assignor to Gould Inc., Rolling Meadows, Ill.

Filed May 31, 1979, Ser. No. 44,093

Int. Cl.³ H01H *85/12*

U.S. Cl. 337—161 **7 Claims**



1. A ribbon-type fusible element for electric fuses including a base metal having a relatively high fusing point and an overlay metal having a relatively low fusing point and capable of severing by a diffusion process the current path through said base metal comprising in combination

(a) a base metal having a front side and a rear side and defining a point of reduced cross-section;

(b) a first overlay metal on said base metal arranged on said front side of said base metal in spaced relation from said point of reduced cross-section;

(c) a second overlay metal on said base metal arranged on said rear side of said base metal in spaced relation from said point of reduced cross-section; whereby

(d) upon fusion of said first overlay metal and upon fusion of said second overlay metal two oppositely directed metal jets flow toward said point of reduced cross-section of said base metal and sever said base metal at said point of reduced cross-section.

4,227,169

COMBINED THERMAL AND ELECTRICAL CUT-OFF DEVICE

John K. McVey, Bensenville, and Larry L. Sharp, Schaumburg, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

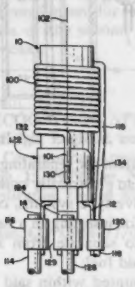
Filed May 10, 1979, Ser. No. 37,988

Int. Cl.³ H01H *85/02, 85/20*

U.S. Cl. 337—182 **2 Claims**

1. A combined thermal and electrical cut-off device comprising a radial lead thermal cut-off device having radial leads which opens a series circuit connection between said radial leads when the ambient temperature is exceeded wherein said radial lead thermal cut-off device has an elongated cylindrical body with a longitudinal axis, an open helical electrically conductive coil that has a central axis for receiving said elongated thermal cut-off device therein so that the central axis of

the coil and the longitudinal axis of the thermal cut-off device are approximately in alignment, a first terminal end of said electrical coil being electrically connected to one of the radial leads of said thermal cut-off device and the other radial lead of said thermal cut-off device being electrically connected to a first input wire of the protected circuit, and a general C-shaped electrically conductive support bracket for supporting both said thermal cut-off device and said coil which has a central



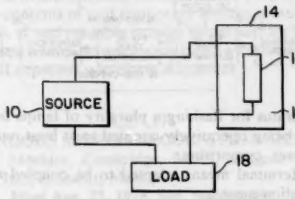
axis which is approximately in alignment with the axis of said helical coil, said support bracket having a ring portion and an integral lead bar that extends from said ring portion with said ring portion being located intermediate said electrical coil and said input wires, with the second terminal end of said helical coil being electrically connected to said bracket, said lead bar being electrically connected to a second input wire of the protected circuit.

4,227,170

CURRENT-REDUCING DEVICE

Moshe Friedman, Washington, D.C., and Michael G. Ury, Bethesda, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 22, 1977, Ser. No. 808,839
Int. Cl.³ H01H *85/02*
U.S. Cl. 337—204 **6 Claims**



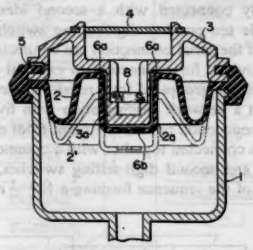
1. A current-reducing device comprising:
a modifiable-conductive-state (MCS) member; and
a volume of fluid, said MCS member being immersed in said fluid,
said MCS member being fabricated from an electrically conductive material and said fluid being a material which is substantially electrically non-conductive,
said member and said fluid being of materials which chemically react exothermically with each other at a predetermined temperature to convert the MCS member to an electrical insulator.

4,227,171

LIQUID LEVEL SENSING MEANS

Noboru Masuda, Tokyo, and Mitsuyuki Suzuki, Okazaki, both of Japan, assignors to Denki Onkyo Co., Ltd., Tokyo and Aisin Seiki Kabushiki Kaisha, Kariya, both of, Japan

Filed Dec. 21, 1978, Ser. No. 971,878
Claims priority, application Japan, Dec. 23, 1977, 52/156294
Int. Cl.³ H01H *35/18*
U.S. Cl. 338—33 **2 Claims**



1. A liquid level sensing means in a liquid reservoir, said reservoir having a container base, a cap for enclosing said base, said cap having means permitting communication between said reservoir and the atmosphere, and a flexible diaphragm sealingly disposed between said cap and said base separating liquid in said reservoir from the atmosphere, said diaphragm moving responsive to the level of said liquid, said sensing means comprising:

(a) a cylindrically-shaped extension integrally depending from said cap into a cylindrically-shaped cup formed in said diaphragm proximate its center, said extension and said cup having corresponding, cooperative dimensions;

(b) a magnet means disposed within said cylindrical extension and a magneto-resistive element attached to each pole of said magnet means, said magneto-resistive elements being offset from each other and offset from the center line of said magnet means in a direction parallel to the movement of said diaphragm and being electrically in a circuit for effecting an electrical signal responsive to the magnetic flux applied to the magneto-resistive elements, each end of said magnet means including one said magneto-resistive element disposed in a respective vertical channel formed in the inside wall of said cylindrical extension; and

(c) switching means including at least one switching member of magnetic material disposed on the inside wall of said cylindrical cup, said switching means being carried by said movable diaphragm such that said switching member passes proximate said magneto-resistive elements outside the wall of said cylindrical extension as the diaphragm moves in response to change in fluid level, thereby affecting the magnetic flux applied to said magneto-resistive elements.

4,227,172

TWO DIGIT RESISTANCE DECADE BOX

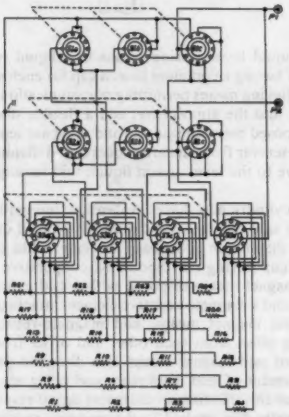
Robert E. Sherman, 2421 Sheridan Ave. South, Minneapolis, Minn. 55405

Continuation of Ser. No. 833,870, Sep. 16, 1977, abandoned. This application Jan. 24, 1979, Ser. No. 5,986
Int. Cl.³ H01C *10/18*
U.S. Cl. 338—123 **2 Claims**

1. A resistance decade box for applications where the adjustment of a resistance value to a precision of two significant digits is sufficient, wherein the improvement consists of the

combination of circuit elements given below which acting together have the effect of incorporating a tens-multiplier into the method of setting a desired resistance value as well as reducing the number of components required for the manufacture of the device; these circuit elements and their manner of combination are:

A first three-pole ten position digit-setting switch including interconnections among pole and pole position terminals on the switch forming five electrically distinct junctions which, when connected to a chosen feasible 10^k resistance network, is able, by selection of its ten positions, to form the 10^k decade of resistance values between two of the said junctions on the switch; said first digit-setting switch is serially connected with a second identically wired three-pole ten position digit-setting switch, and the extremes of the serial connection are connected to terminal posts provided for connection to external circuits; a sequence of six groups of four resistors, each group connected in a network configuration with five electrically distinct connection points, one point from each of the six networks connected together with a common junction of the first and second digit-setting switches, and the kth network of the sequence forming a 10^{k-1} resistance net-



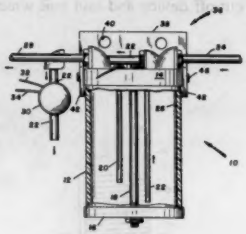
work capable of being interconnected to form the 10^{k-1} decade of resistance values by either the first or the second digit-setting switch when the remaining four points of the network are connected to the other four junction points on either the first or the second digit-setting switch; an eight-pole five position tens-multiplier switch whose consecutive positions connect four junction points of the first digit-setting switch to four respective connection points in the 10^1, 10^2, 10^3, 10^4, or 10^5 resistance networks and simultaneously connect four junction points of the second digit-setting switch to four respective connection points in the 10^0, 10^1, 10^2, 10^3, or 10^4 resistance networks; the five consecutive positions of the tens-multiplier switch thereby respectively connect the first and second digit-setting switches as a 10^1 resistance decade module in series with a 10^0 resistance decade module, a 10^2 resistance decade module in series with a 10^1 resistance decade module, a 10^3 resistance decade module in series with a 10^2 resistance decade module, a 10^4 resistance decade module in series with a 10^3 resistance decade module, or a 10^5 resistance decade module in series with a 10^4 resistance decade module, which has the effect of multiplying the value of the decade box resistance by **10** for each advance of the tens-multiplier switch position.

4,227,173

DIESEL FUEL MONITOR SYSTEM

Joseph H. Clark, 4015 Woodley Rd., Ellicott City, Md. 21043

Filed Feb. 9, 1979, Ser. No. 10,732
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—59 **11 Claims**



2. A fuel monitor system for separating, detecting, and automatically disposing of an electrically conductive contaminates in the fuel of automotive type systems, comprising:

a separating means for inserting in a fuel line of automotive type equipment to separate from and accumulate said contaminates in said fuel;

a sensing means mounted within said separating means to detect the presence of said contaminates;

a means for maintaining pressure on said fuel containing said contaminates within said separating means, connected to said fuel line;

an electrical circuit system connected to said sensing means to control the operation and to provide a charge to said sensing means;

a readout means connected to said electrical circuit system to signal the status of said fuel monitoring system; and

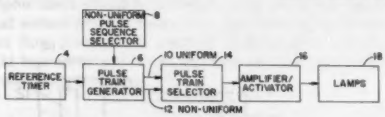
a disposal means connected to said separating means to discharge said accumulation of said contaminates.

4,227,174

DISTRESS/HAZARD SIGNAL FLASHER

Robert A. Belcher, 23 Grove St., San Rafael, Calif. 94901, and Gregg D. Ahumada, San Rafael, Calif., assignors to Robert A. Belcher, San Rafael, Calif.

Filed Mar. 30, 1978, Ser. No. 891,670
Int. Cl.[2] G08B *5/38*; B60Q *1/26*
U.S. Cl. 340—81 R **12 Claims**



1. Apparatus for flashing a plurality of lamps on a vehicle, the lamps being operatively coupled to at least one lamp activation means, comprising:

output terminal means adapted to be coupled to the lamp activation means,

the output terminal means having a first state wherein the lamp activation means is enabled, and a second state wherein the lamp activation means is disabled;

first pulsing means adapted to be coupled to the output terminal means for any arbitrary desired duration for causing the output terminal means to alternately assume its first state and its second state, wherein the time intervals during which the output terminal means is in its first state are of substantially equal length, and wherein the time intervals during which the output terminal means is

in its second state are of substantially equal length, thus defining a uniform pulse sequence;

second pulsing means adapted to be coupled to the output terminal means for any arbitrary desired duration for causing the output terminal means to alternately assume its first state and its second state, wherein at least two of the time intervals during which the output terminal means is in its first state are of unequal length, thus defining a non-uniform pulse sequence which is repeatedly applied to the output terminal means for as long as the second pulsing means is coupled to the output terminal means; and

manually actuable selection means operatively coupled between the first pulsing means, the second pulsing means and the output terminal means for selectively coupling the first pulsing means or the second pulsing means to the output terminal means.

4,227,175

DATA RECOGNITION APPARATUS

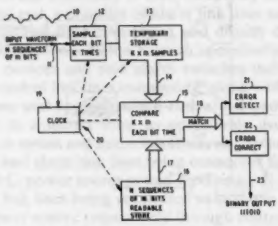
Eric L. Newman, Eastleigh, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 15, 1979, Ser. No. 3,551

Claims priority, application United Kingdom, Jan. 18, 1978, 02045/78

Int. Cl.³ G06F *11/08*

U.S. Cl. 340—146.2 **14 Claims**


INPUT WAVEFORM N SEQUENCES OF m BITS
SAMPLE EACH BIT K TIMES
TEMPORARY STORAGE K x m SAMPLES
CLOCK
COMPARE K x m EACH BIT TIME
MATCH
ERROR DETECT
ERROR CORRECT
N SEQUENCES OF m BITS READABLE STORE
BINARY OUTPUT (1101)

1. Data recognition apparatus responsive to a serial input waveform, the input waveform including N different possible overlaping waveform sequences, each waveform sequence representing a plurality of m binary data bits, and having a period of m equal, or substantially equal bit times comprising:

temporary storage means for storing the input waveform and having sufficient capacity to temporarily store any one of said waveform sequences;

readable storage means for storing representations of N different waveform sequences expected to occur in the input waveform; and

comparison means operable during each bit time for comparing the contents of said temporary storage means with the contents of said readable storage means and for indicating the closest match between each input waveform sequence and said expected waveform sequences.

4,227,176

CONTINUOUS SPEECH RECOGNITION METHOD

Stephen L. Moshier, Cambridge, Mass., assignor to Dialog Systems, Inc., Belmont, Mass.

Filed Apr. 27, 1978, Ser. No. 901,001

Int. Cl.² G10L *1/00*

U.S. Cl. 340—146.3 R **10 Claims**

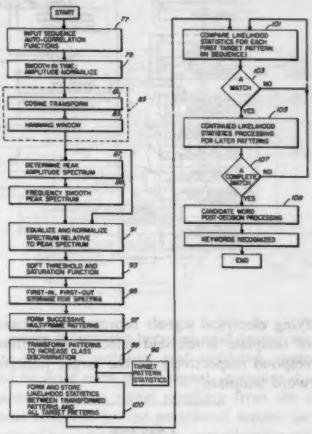
1. In a speech analysis system for recognizing at least one predetermined keyword in a continuous audio signal, each said keyword being characterized by a template having at least one target pattern, said target patterns having an ordered sequence and each target pattern representing a plurality of short-term power spectra spaced apart in real time, an analysis method comprising the steps of

repeatedly evaluating a set of parameters determining a short-term power spectrum of said audio signal within each of a plurality of equal duration sampling intervals, thereby to generate a continuous time ordered sequence of short-term audio power spectrum frames,

repeatedly selecting from said sequence of frames, one first frame and at least one later occurring frame to form a multi-frame pattern,

comparing each thus formed multi-frame pattern with each first target pattern of each keyword template,

deciding whether each said multi-frame pattern corresponds to a said first target pattern of a keyword template,



for each multi-frame pattern which, according to said deciding step, corresponds to a said first target pattern of a potential candidate keyword, selecting later occurring spectrum frames to form later occurring multi-frame patterns,

deciding whether said later occurring multi-frame patterns correspond respectively to successive target patterns of said potential candidate keyword template, and

identifying a candidate keyword template when said selected multi-frame patterns correspond respectively to the target patterns of a said keyword template.

4,227,177

CONTINUOUS SPEECH RECOGNITION METHOD

Stephen L. Moshier, Cambridge, Mass., assignor to Dialog Systems, Inc., Belmont, Mass.

Filed Apr. 27, 1978, Ser. No. 901,006

Int. Cl.² G10L *1/00*

U.S. Cl. 340—146.3 R **14 Claims**

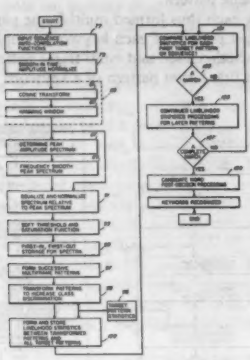
1. In a speech analysis system for recognizing at least one predetermined keyword in an audio signal, each said keyword being characterized by a template having at least one target pattern, said target patterns having an ordered sequence and each target pattern representing at least one short term power spectrum, an analysis method comprising the steps of

repeatedly evaluating electrical signals representing a set of parameters determining a short-term power spectrum of said audio signal within each of a plurality of equal duration sampling intervals, thereby to generate a continuous time ordered sequence of short-term audio power spectrum frames,

repeatedly generating electrical signals representing a peak spectrum corresponding to said short-term power spectrum frames by a fast attack, slow decay peak detecting function, and

for each short-term power spectrum frame, dividing the amplitude of each frequency band by the corresponding

intensity value in the corresponding peak spectrum, thereby to generate a frequency band equalized spectrum frame corresponding to a compensated audio signal having the same maximum short-term energy content in each of the frequency bands comprising the frame, and



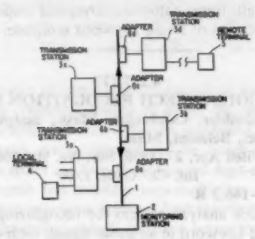
identifying electrical signals representing a candidate keyword template when said selected multi-frame patterns correspond respectively to the target patterns of a said keyword template.

4,227,178

DECENTRALIZED DATA TRANSMISSION SYSTEM

Claude J. Gergaud, Cagnes sur Mer; Etienne Grimanelli, Vence, and Andre G. Tracol, Cagnes sur Mer, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 21, 1978, Ser. No. 944,453
Claims priority, application France, Oct. 18, 1977, 77 32158
Int. Cl.[3] H04Q *9/00*; G06F *3/00*
U.S. Cl. 340—147 R **13 Claims**



1. In a data transmission system including a transmission medium to which are connected a plurality of transmitting stations and a monitoring station, a method of operating said system so that any information signals transmitted by a station will be received by all the transmitting stations and the monitoring station, said method comprising steps of:

transmitting from said monitoring station the address of a first transmitting station on said transmission medium;

receiving and recognizing said address at said first transmitting station and, responsive to said reception and recognition of said address, transmitting from said first transmitting station either a message or a status idle character when there is no data message for transmission, said transmitting of a data message being destined for one of said other transmitting stations and said data message beginning with the address of said destination transmitting station and ending with an end of message character; and

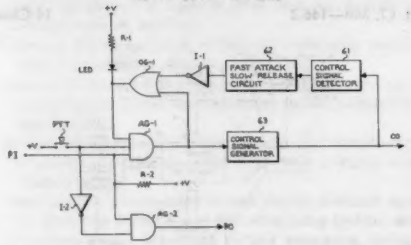
receiving and recognizing either said status idle character or said end of message character at said monitoring station and, responsive to the reception and recognition of either of said characters, transmitting the address of a second transmitting station on said transmission medium.

4,227,179

ARRANGEMENT FOR CONTROL OF REMOTE EQUIPMENT

Fred G. Perry, Lynchburg, Va., assignor to General Electric Company, N.Y.

Filed Mar. 2, 1979, Ser. No. 16,885
Int. Cl.[2] H04Q *7/00*
U.S. Cl. 340—147 LP **7 Claims**



1. In a system having common equipment and a plurality of control locations for controlling said common equipment, an arrangement for use at each of said control locations to prevent more than one of said control locations from producing a control signal at the same time and to provide optimum control of the interval between control signals comprising:

a. a control output terminal for connecting said control location to said common equipment;

b. a control signal generator having an input for rendering said signal generator operative and producing a control signal in response to a logic 1 signal, and having an output connected to said control output terminal;

c. a signal detector having an input connected to said control output terminal; and having an output for producing a logic 0 in response to the presence of a control signal at said control output terminal, and for producing a logic 1 following a predetermined time delay after and in response to the absence of a control signal at said control output terminal;

d. an OR gate having first and second inputs and an output;

e. a first AND gate having first and second inputs and an output;

f. means connecting said OR gate first input to said signal detector output;

g. means connecting said OR gate output to said first AND gate first input;

h. means connecting said first AND gate output to said OR gate second input and to said signal generator input;

i. and means connected to said first AND gate second input for selectively applying a logic 1 thereto to render said signal generator operative in the absence of a control signal at said control output terminal.

4,227,180

CENTRALIZED MONITOR AND CONTROL SYSTEM

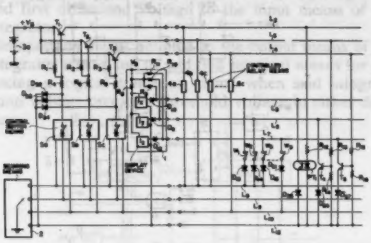
Katsuya Yasuda, Yokohama, and Akio Adachi, Kawasaki, both of Japan, assignors to Hochiki Corporation, Tokyo, Japan

Filed Jan. 3, 1979, Ser. No. 792

Claims priority, application Japan, Jan. 9, 1978, 53-520; Jan. 9, 1978, 53-521

Int. Cl.³ H04Q *9/00*; G08B *29/00*

U.S. Cl. 340—166 R **7 Claims**



6. A centralized monitor and control system comprising: a receiving and; an alarm terminal end; a D.C. power source at said receiving and; a plurality of display devices and a plurality of control switch means at said receiving end; a plurality of alarm switches and a plurality of controlled relay means at said alarm terminal end; a plurality of alarm link lines and a plurality of common link lines connecting said display devices and said alarm switches in a matrix form to operatively associated said display devices and said alarm switches individually; a plurality of control link lines connecting, along with said common link lines, said control switch means and said controlled relay means in a matrix form to operatively associate said control switch means and said controlled relay means individually, each of said alarm link lines being connected to one terminal of said D.C. power source at said receiving end and each of said control link lines being connected to said one terminal of said D.C. power source respectively through controlling solid-state energization switch means placed in conduction state in response to the operation of said control switch means connected to each of said control link lines; and scanning means at said receiving end for sequentially bringing each of said common link lines to the same potential as the other terminal of said D.C. power source such that with one of said alarm switches operated, when one of said common link lines connected to said operated alarm switch is scanned by said scanning means, one of said display devices connected to said one common link line is operated correspondingly, and when one of said common link lines connected to one of said control switch means which is operated in response to said operated display device is scanned by said scanning means, one of said controlling solid-state energization switch means connected to said operated control switch means is energized to connect a corresponding one of said control link lines to said one terminal of said D.C. power source, thereby to operate one of said controlled relay means connected to said scanned common link line.

4,227,181

PERIPHERAL STATION IN AN INFORMATION HANDLING SYSTEM

William J. Brittain, Westcliff-on-Sea, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 10, 1978, Ser. No. 950,104

Claims priority, application United Kingdom, Oct. 12, 1977, 42402/77; Oct. 12, 1977, 42403/77; Oct. 12, 1977, 42404/77

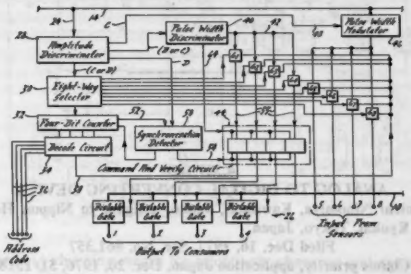
Int. Cl.³ H04Q *9/06*

U.S. Cl. 340—167 R **8 Claims**

1. For use in a communication system having a signal bus, a master station, and a plurality of peripheral stations controlled by signals transmitted on the signal bus by the master station in a time division multiplex manner, the signals being transmitted cyclically in information frames with the information frame for each peripheral station occupying a given position in the cycle, an improved peripheral station comprising:

address decoding means for identifying an information frame for said peripheral station and for generating an enable signal in response thereto, said decoding means including means for setting an address and a counter for counting information frames, said address setting means and said counter being used in identification of said information frame;

gating means for coupling signals from said signal bus to one or more outputs of said peripheral station in response to said enable signal;



verifying means interposed between said gating means and said one or more outputs, said verifying means being arranged to store each gated signal, compare it with the corresponding gating signal resulting from the information frame received by the peripheral station during the next cycle of transmitted signals, and allowing said one or more outputs to change when the compared signals agree; and

sync detector means for detecting synchronizing (sync) signals on said signal bus, for comparing the occurrence of said sync signals with the count held in said counter, and for disabling said verifying means on the detection of a lack of synchronism between the signals on said signal bus and said address decoding means.

4,227,182

MINUTE CHANGE DETECTING SYSTEM

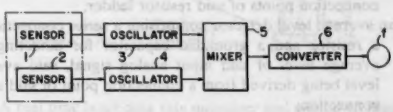
Hiroomi Ogasawara, 3821-4, and Masaomi Ogasawara, 3833, both of Yamakita, Yamakitamachi, Ashigarakami-gun, Kanagawa-ken, Japan

Continuation of Ser. No. 721,904, Sep. 9, 1976, abandoned. This application Aug. 15, 1978, Ser. No. 933,685

Claims priority, application Japan, Sep. 10, 1975, 50-108848

Int. Cl.² G01R *27/26*; G01L *1/14*; G08C *19/10*

U.S. Cl. 340—870.37 **14 Claims**



1. A system for detecting displacement of an object, comprising:

(a) a sensor including a first stationary electrode plate, a second stationary electrode plate spaced from said first stationary electrode plate, and a movable electrode plate spaced from said first stationary electrode plate to provide a first gap therebetween and spaced from said second stationary electrode plate to provide a second gap therebetween, thereby forming two variable capacitors; said movable electrode plate responsive to displacement of the

object to move closer to one of said stationary electrode plates to reduce the gap therebetween and further from the other of said stationary electrode plates to increase the gap therebetween, thereby causing the capacitance of one of said variable capacitors to increase and the capacitance of the other of said variable capacitors to decrease;

(b) two oscillator circuits, each having an associated one of said variable capacitors incorporated therein as a frequency varying component; and

(c) a mixer connected to said two oscillator circuits for providing a beat frequency signal of a frequency determined by the difference in the frequencies of said two oscillator circuits.

4,227,183

ANALOG TO DIGITAL CONVERTING DEVICE

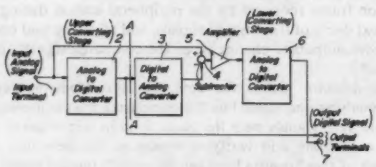
Yuichi Ninomiya, Kawasaki, Japan, assignor to Nippon Hoso Kyokai, Tokyo, Japan

Filed Dec. 16, 1977, Ser. No. 861,357

Claims priority, application Japan, Dec. 20, 1976, 51/151885; Jun. 1, 1977, 52/63184

Int. Cl.[2] H03K *13/175*

U.S. Cl. 340—347 AD **2 Claims**



1. An analog to digital converting device comprising a plurality of analog to digital converting stages connected in cascade for converting an input analog signal to a digital signal consisting of a plurality of bits, a far lower order for converting stage of said plurality of analog to digital converting stages comprising

a plurality of comparators for comparing an input analog signal with a respective reference level;

a resistor ladder comprising a plurality of resistors connected successively with one another and with a constant current source in series for supplying said comparators with respective reference levels derived successively from connection points of said resistor ladder;

an average level detector comprising a series connection of a resistor and a grounded capacitor for detecting the average level of said input analog signal, said average level being derived from a connection point of said series connection;

a DC level shifter connected between said connection point of said series connection of said resistor and said grounded capacitor of said average level detector and a bottom of said resistor ladder for shifting said average level derived from said connection point to a level which corresponds to one of said respective reference levels derived successively from said connection points of said resistor ladder, and

a code converter provided for converting successive output signals derived from said plurality of comparators to a binary code digital signal.

4,227,184

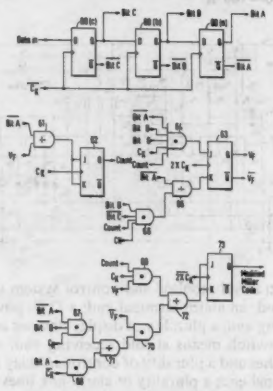
MODIFIED MILLER CODE ENCODER

George A. Howells, Bishop's Stortford, and Douglas E. Woodman, Harlow, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 19, 1978, Ser. No. 970,895

Int. Cl.[2] H04L *3/00*

U.S. Cl. 340—347 DD **5 Claims**



1. Apparatus for encoding a binary data stream into a modified Miller Code data stream comprising:

first means responsive to said binary stream and a control signal indicating whether the bits of said binary stream are to be coded according to a conventional Miller Code or a modified version thereof to detect successive pairs of successive binary "0" bits in said binary stream and to detect the number of binary "1" bits in said binary stream disposed between each bit of each of said pairs of "0" bits;

second means coupled to said first means responsive to said binary stream and the output signal of said first means to produce said control signal; and

third means coupled to said first and second means responsive to said binary stream, the output signal of said first means and said control signal to produce said modified Miller Code data stream including a transition period of two bit periods for every pair of binary "1" **bits disposed between each bit of each of said pairs of** "0" bits, said transition period extending from the transition at the end of the first bit of an associated one of said pairs of "0" bits.

4,227,185

SINGLE CHIP INTEGRATED ANALOG-TO-DIGITAL CONVERTER CIRCUIT POWERED BY A SINGLE VOLTAGE POTENTIAL

John W. Kronlage, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 744,019, Nov. 22, 1976, abandoned. This application Nov. 29, 1978, Ser. No. 964,774

Int. Cl.[3] G01K *7/00;* **H03K** *13/02, 13/20*

U.S. Cl. 340—347 NT **20 Claims**

1. A single chip integrated dual slope analog-to-digital converter circuit comprising:

(a) first terminal means for receiving a relatively low voltage potential, wherein said integrated circuit operates entirely from a single voltage potential applied to said first terminal means;

(b) second terminal means for receiving analog input signals;

(c) scaling amplifier means coupled to said first and second terminal means for generating a first voltage which is a representation of received analog input signals;

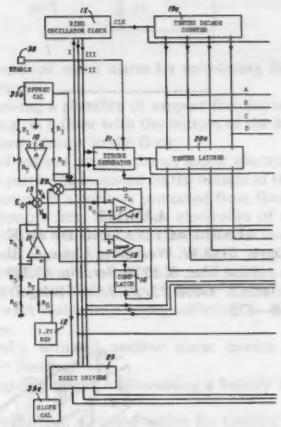
(d) reference amplifier means coupled to said first terminal

means for generating a second voltage representative of the full scale of the received analog input signals;

(e) integrator means having input and output means and means for coupling an integration capacitor thereto, said integrator means for generating a ramp voltage in one direction when said first voltage is applied to the input means thereof and for generating a ramp voltage in the opposite direction when said second voltage is applied to the input means thereof;

(f) controllable switch means for selectively applying either said first or second voltage to the input means of said integrator;

(g) comparator means coupled to the output means of said integrator means and to said first terminal means for producing a logical transition signal when said integrator ramp voltage crosses a threshold voltage in either direction;



(h) triggerable storage means coupled to said comparator means, and responsive to said transition signal for storing an indication of the occurrence thereof;

(i) digital counter means for generating a digital count;

(j) means coupled to said counter means, and responsive to the indication stored in said triggerable storage means for storing said digital count upon the occurrence of said transition signal, said storage digital count being a digital representation of the analog input signals applied to said second terminal means;

(k) voltage regulator means coupling said first terminal means to said scaling amplifier means, said reference amplifier means, said integrator means and said comparator means for regulating the low-voltage reference potential applied to each of said means.

4,227,186

SELF-STABILIZING ANALOG TO DIGITAL CONVERTER USEFUL IN PHASE LOCKED LOOP TUNING SYSTEMS

Felix Aschwanden, Thalwil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Feb. 9, 1979, Ser. No. 10,868

Claims priority, application United Kingdom, Mar. 20, 1978, 10999/78; Apr. 19, 1978, 15509/78

Int. Cl.[2] H03K *13/20*

U.S. Cl. 340—347 CC **10 Claims**

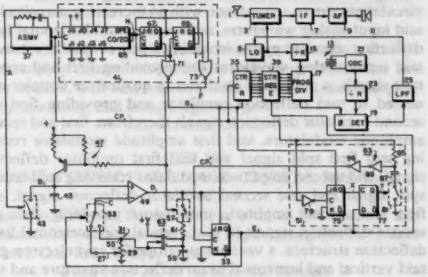
1. Apparatus comprising: comparator means for generating an output signal having a first level when the amplitude of a first input signal exceeds the amplitude of a second input signal and a second level when the amplitude of said second input signal exceeds the amplitude of said first input signal;

voltage divider means having a controllable voltage division ratio for generating said first input signal by the voltage division of a reference voltage;

first capacitive means;

first charging means for selectively charging said first capacitive means during a first predetermined period to generate said second input signal, said output signal changing levels at a time within said first predetermined period determined by said controllable division ratio;

second capacitive means;



second charging means for selectively charging said second capacitive means during a second predetermined period after said first predetermined period in response to the magnitude of said second input voltage at the end of said first predetermined period to develop said reference voltage; and

utilization means responsive to said output signal for generating a binary word determined by the time interval between the beginning of said first predetermined period and said time when said output signal changes levels.

4,227,187

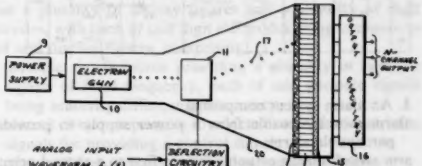
HIGH SPEED REAL TIME QUANTIZER AND ANALOG/DIGITAL CONVERTER

John V. McNamara, Rome, and Paul Van Etten, Clinton, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 30, 1979, Ser. No. 25,413

Int. Cl.[3] H03K *13/00*

U.S. Cl. 340—347 P **4 Claims**



1. A real time large data rate quantizer and analog-to-digital converter for an input analog waveform being comprised of an electron gun providing a constant high energy electron beam, a fast phosphor cathode ray tube screen, a mosaic target of light sensitive detectors arranged in annular rings, and in juxtaposed light receiving relationship to said cathode ray tube screen, said mosaic target having a preselected number of sectors, each sector being in the form of a wedge shaped piece, each sector including a preselected number of segments, each segment being a separate light sensitive device, each sector corresponding to a specific time interval of said input analog signal and each segment corresponding to a finite range in

amplitude of said input analog waveform, a fiber optics face plate between said mosiac target and said fast phosphor cathode ray tube screen transmitting light therebetween, light filter means adjacent said mosaic target for blocking slow response time light emanating from said screen, a vertical and horizontal beam deflecting structure, vertical and horizontal beam deflection circuitry means connected to said vertical and horizontal beam deflection structure and operating in combination therewith to effect impingement of said electron in a circular pattern on said fast phosphor cathode ray tube screen, said vertical and horizontal beam deflecting circuitry means receiving said input analog waveform to provide an increasing diameter of said circular pattern in accordance with an increasing magnitude of said input analog waveform, said vertical and horizontal beam deflecting circuitry means including a power splitter receiving said input analog waveform and providing first and second split signals, a deflection oscillator, a quadrature coupler connected to said deflection oscillator and providing first and second oscillator deflection signals therefrom, first and second amplitude modulators, said first amplitude modulator receiving said first split signal and said first oscillator deflection signal, and second amplitude modulator receiving said second split signal and said second oscillator deflection signal, said first and second amplitude modulators providing first and second deflection signals to said vertical and horizontal beam deflection structure, a vacuum envelope for said electron gun, said vertical and horizontal beam deflection structure and said fast phosphor cathode ray tube screen, and a binary encoder circuit receiving the outputs of said light detectors to provide a binary digital output waveform.

4,227,188

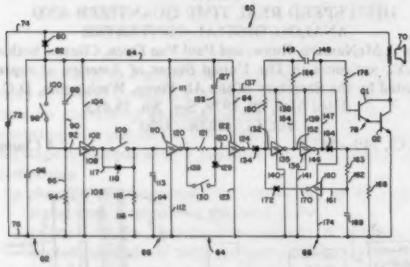
INTRUSION ALARM CONTROL SYSTEM

Christian C. Petersen, 206 Conant Rd., Westwood, Mass. 02090

Division of Ser. No. 750,667, Dec., 1976, Pat. No. 4,122,437, which is a continuation-in-part of Ser. No. 554,717, Mar., 1975, Pat. No. 4,012,611. This application Sep. 25, 1978, Ser. No. 945,643

Int. Cl.[2] **G08B** *13/08*

U.S. Cl. 340—566 **9 Claims**



1. An alarm system comprising:

alarm means actuable from a power supply to provide a perceptible alarm;

arm switch means actuable from a first to a second orientation to enable said system;

timing circuit means responsive to said arm switch means actuation to said second orientation for deriving an arm condition signal at the termination of a predetermined initial delay interval, said interval commencing with said actuation;

sensor means electrically coupled with said timing circuit means, actuable in response to a sensed externally generated phenomena, for deriving a short, transient conveyance of said arm condition signal;

first control circuit means, electrically coupled with said sensor means and responsive to a said conveyance of said arm condition signal to derive a predetermined input condition for a first predetermined interval;

second control circuit means including alarm delay switch means selectively actuable between instant response and delayed response orientations and responsive to said predetermined input condition when said alarm delay switch means is in said delayed response orientation for effecting the commencement of an output signal following a second predetermined interval from the receipt of said predetermined input condition, and responsive to said predetermined input condition when said alarm delay switch means is in said instant response orientation for substantially immediately effecting the commencement of said output signal;

oscillator means responsive to said output signal for deriving an oscillating output signal of predetermined frequency; and

means responsive to said oscillating output signal for actuating said alarm means at said predetermined frequency.

4,227,189

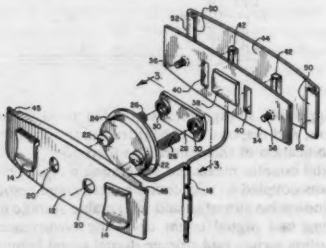
ALARM ACTIVATING DEVICE

Albert F. Davis, 2148 W. Washburn, Chicago, Ill. 60608

Filed Mar. 5, 1979, Ser. No. 17,389

Int. Cl.[3] **G08B** *13/10, 1/08;* **H04Q** *7/00*

U.S. Cl. 340—573 **8 Claims**



1. An alarm activating device comprising:

a movable contact plate comprising a first contact and disposed in substantially parallel alignment with a fixed contact plate, which fixed contact plate supports a second contact, said fixed contact plate being stationarily secured to a mounting plate opposite said movable contact plate, and said first and said second contacts being disposed adjacent one another;

means for applying positive pressure to said movable contact plate about its face opposite said fixed contact plate;

a movable pressure plate disposed in substantially parallel alignment to said fixed contact plate opposite said movable contact plate;

means maintaining a minimum spaced-apart position of said movable pressure plate and said movable contact plate;

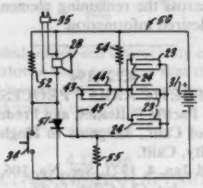
means allowing free movement of said movable pressure plate from a position abutting said fixed contact plate to a position spaced-apart a distance from said fixed contact plate at least equal to said minimum spaced-apart disposition of said movable pressure plate and said movable contact plate; and

an electric circuit that is closed upon contact of said first and second contacts.

4,227,190
WATER ALARM FOR MONITORING FLOOR MOISTURE

Jerry K. Kelley, 3121 N. Nottingham, Chicago, Ill. 60634, and Eugene V. Mateja, 7917 W. Courtland, Norridge, Ill. 60656

Filed Feb. 26, 1979, Ser. No. 14,976
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—604 4 Claims



1. A self-contained water alarm for monitoring floor moisture comprising:

a housing having a plurality of support feet for supporting the housing on a floor with the bottom of the housing in close spaced relation to the floor;

a plurality of pairs of printed circuit sensor electrodes, each electrode pair being mounted on the outside of the bottom of the housing in a position protected from floor contact by the support feet, the sensor electrodes of each pair being in closely spaced relation to each other immediately above the floor on which the housing is supported, the resistance between the sensor electrodes being very high when the floor is dry and much lower when the floor is covered with water to a depth sufficient to contact the electrodes;

an electrically actuated audible alarm device, mounted within the housing;

battery mounting means for mounting a battery within the housing;

and an alarm circuit, mounted within the housing and interconnecting the alarm device, the battery, and the sensor electrodes, the alarm circuit comprising:

a solid-state switching device, connected to each pair of sensor electrodes and actuatable from a normal non-conductive condition to a sustained conductive condition in response to a low resistance condition between any pair of the sensor electrodes, the switching device having a main discharge path connected in series with the alarm device and the battery;

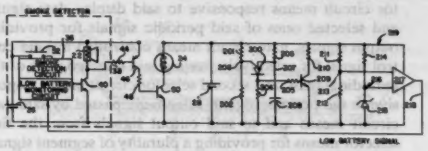
and an auxiliary pair of sensor electrodes mounted on a small pad and electrically connected in parallel with the housing-mounted pairs of sensor electrodes through an elongated extension cord to permit simultaneous monitoring of floor moisture and of the water level in a sump or in a standpipe, the housing including a storage compartment for storing the auxiliary electrode pad and cord when not in use.

4,227,191
LIGHT EMITTING SMOKE DETECTOR

Samuel Raber, c/o Pyrotronics, 8 Ridgedale Ave., Cedar Knolls, N.J.

Filed Feb. 21, 1978, Ser. No. 879,205
Int. Cl.[2] G08B *17/10*; F21V *33/00*
U.S. Cl. 340—628 5 Claims

1. A protection system including a smoke detector section and an escape light section, in which the smoke detector section includes means for detecting the presence of a predetermined level of smoke density and providing an electrical output signal when said level is reached, and means for receiving said signal and providing an audible alarm only as long as said smoke density remains above said predetermined level, the system improvement in which the escape light section comprises additional means for receiving said signal and providing a high-intensity, continuous light of a level sufficient to illuminate the adjacent floor area only as long as the smoke density remains above said predetermined level, and in which said

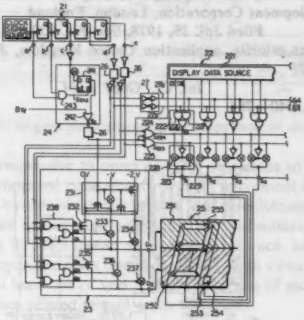


system includes first and second power supply means, said first power supply means independently operating said smoke detector section, and said second power supply means independently operating said escape light section.

4,227,192
DRIVE SYSTEM FOR LIQUID CRYSTAL DISPLAY DEVICE

Heihachiro Ebihara; Fukuo Sekiya, both of Tokorozawa, and Takashi Yamada, Sayama, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed May 26, 1978, Ser. No. 909,889
Claims priority, application Japan, May 31, 1977, 52-63560
Int. Cl.[2] G06F *3/44*
U.S. Cl. 340—765 12 Claims



1. A drive system for a matrix type liquid crystal display device having a plurality of segment electrodes positioned to define a plurality of display figures and a plurality of digit electrodes, with each of said digit electrodes being common to all of said display figures, comprising:

a periodic signal source providing a plurality of periodic signals of fixed frequency, each of said periodic signals being mutually different in frequency;

a control circuit responsive to selected ones of said periodic signals for providing a control signal;

a source of first, second and third reference voltages;

a digit signal generating circuit coupled to receive said first, second and third reference voltages, with the difference between said second and first reference voltages being greater than a threshold level of said liquid crystal display device and the difference between said third and first reference voltages being less than said threshold level, said digit signal generating circuit being responsive to said control signal and to selected ones of said periodic signals for successively applying said first, second and third reference voltages to output terminals thereof in a predetermined sequence, said predetermined sequence being cyclically repetitive, for thereby producing digit signals on said output terminals of the digit signal generating circuit to be applied to corresponding ones of said digit electrodes, with voltage level transitions of said digit signals being

synchronized with voltage level transitions of said control signal;

a segment signal generating circuit composed of a display data source for producing display data signals, first selector circuit means responsive to said display data signals and selected ones of said periodic signals for providing output signals, gate circuit means controlled by said control signal for selectively passing said selected ones of the periodic signals, and second selector circuit means responsive to the periodic signals selectively passed by said gate circuit means and to said output signals from the first selector means for providing a plurality of segment signals which vary in potential between said first and second reference voltage levels, with voltage level transitions of said segment signals being synchronized with voltage level transitions of said control signal, and with each of said segment signals being applied in common to at least two of the segment electrodes of one of said display figures;

whereby selected ones of said segment electrodes are driven in a time-sharing manner by the voltage difference between said selected segment electrodes and the corresponding digit electrodes being periodically made to exceed said threshold voltage level.

4,227,193

METHOD AND APPARATUS FOR MATRIX ADDRESSING OPTO-ELECTRIC DISPLAYS

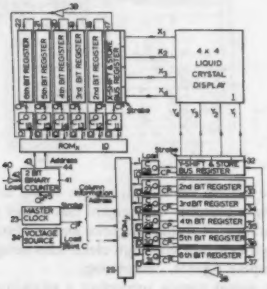
Ian A. Shanks, Malvern, England, assignor to National Research Development Corporation, London, England

Filed Jul. 25, 1978, Ser. No. 927,823

Claims priority, application United Kingdom, Jul. 26, 1977, 31399/77

Int. Cl.[2] G06F *3/14*

U.S. Cl. 340—784 **13 Claims**



1. A display apparatus comprising:

(I) An electro optic display having a layer of display material between two dielectric substrates, a first series of m electrodes on one substrate and a second series of n electrodes on the other substrate arranged to define a matrix of m×n elements across which electric signals may be applied to cause an observable display effect;

(ii) means for generating a first series of m different reference electrical waveforms, means for applying a different one of the m different waveforms simultaneously to each electrode in the first series of electrodes;

(iii) means for generating a second series of electrical waveforms different from one another and from each of the first series of waveforms;

(iv) means for selecting waveforms from the second series of waveforms for application to each electrode in the second series of electrodes, the selected waveform being related to the waveforms on the first series of electrodes and to the desired information to be displayed at each element associated with each electrode in the second series of electrodes;

(v) means for applying the selected waveforms simultaneously to the second series of electrodes concurrently with the waveforms applied to the first series of electrodes;

(vi) whereby an rms voltage less than a display effect threshold voltage is maintained across selected elements and an rms voltage greater than the display effect threshold is maintained across the remaining elements to collectively display the desired information.

4,227,194

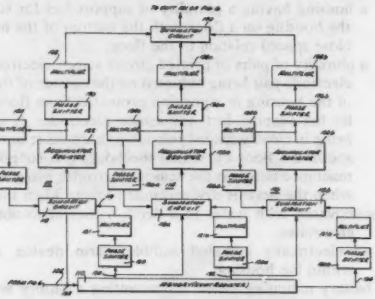
SYNTHETIC ARRAY PROCESSOR

Elvin E. Herman, Pacific Palisades, and Frederick C. Williams, Topanga, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 4, 1971, Ser. No. 106,293

Int. Cl.[3] G01S *13/90*

U.S. Cl. 343—5 CM **33 Claims**



15. A device for processing radar signals to provide synthetic array line-by-line imagery data in the form of signals produced during each processing period of recurring cycles of said periods, said device comprising:

means for forming a plurality of subarray signals during each processing period; said forming means including a plurality of processor channels one of which is associated with each subarray signal, each processing channel including means for applying an incremental phase adjustment to the subarray signal of the corresponding period of the preceding processing cycle, and means for modifying the resultant phase shifted signal as a function of said radar signals to compensate for changes in the associated subarray between processing cycles; and

means for combining said plurality of subarray signals formed during each processing period; whereby data associated with each one of a plurality of range resolution elements is formed during a corresponding period of each cycle and subsequent lines of imagery data are formed during subsequent processing cycles.

4,227,195

FUZE

James Salerno, Rockville; Fabian T. Liss, Bethesda, both of Md., and Frank Weiss, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 19, 1963, Ser. No. 311,609

Int. Cl.[3] G01S *13/10, 13/52;* H03B *11/00*

U.S. Cl. 343—17.1 R **6 Claims**

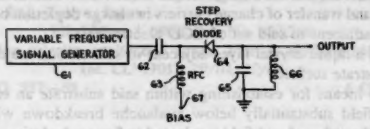
2. A radar signal code generator comprising:

a. a first oscillator for generating a first signal;

b. a second oscillator which is frequency variable and having a control input which is operatively connected to said first oscillator in such a manner that the frequency of the

output of said second oscillator is dependant on the instantaneous amplitude of said first signal; and

c. pulse generator means for producing a series of carrier



wave modulated pulses and operatively connected to said second oscillator in such a manner that the repetition rate of said pulses is equal to the instantaneous frequency of the output of said second oscillator.

4,227,196

DIRECTION FINDING APPARATUS

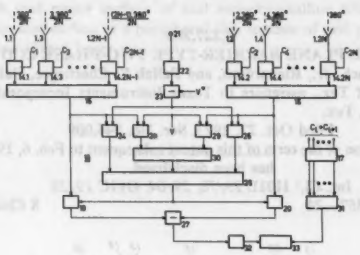
Huibert B. Langeraar, Hengelo, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Nov. 1, 1978, Ser. No. 956,753

Claims priority, application Netherlands, Nov. 14, 1977, 7712482

Int. Cl.[2] H04B 7/00

U.S. Cl. 343—100 CL **3 Claims**



1. A radio direction finding apparatus comprising an omni-directional receiving antenna element, an array of directional receiving antenna elements, two log video detectors, means for separately connecting pairs of contiguous elements of said array to said two detectors, a third log video detector connected to said omni-directional element, means coupled to each of said two detectors and said third detector for producing a control signal when the output signals from each of said two detectors differs from the output signal from said third detector by a predetermined value, a subtraction circuit for generating, in response to output signals from said two detectors, a signal representative of the azimuth of a transmitter transmitting a signal received by the pair of contiguous elements connected to said two detectors, and gate means coupled to each of said two detectors and responsive to said control signal for applying the output signals from said two detectors to said generating means upon occurrence of said control signal.

4,227,197

LOAD MOVING DEVICES

William M. Nimmo, East Kilbride, Scotland, and Richard Jarrett, Leigh-on-Sea, England, assignors to The Marconi Company Limited, Chelmsford, England

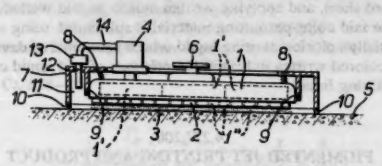
Filed Dec. 8, 1978, Ser. No. 967,637

Claims priority, application United Kingdom, Dec. 8, 1977, 51236/77

Int. Cl.[2] H01Q 1/12

U.S. Cl. 343—878 **15 Claims**

1. A load moving device including a base member provided to support at least part of a load to be moved; means for introducing a lubricant between said base member and a surface over which said load is to be moved; a skirt member surrounding said base member and having a seal operative between said



skirt member and said surface and tending to prevent the passage of said lubricant beyond said skirt, and means for scavenging said lubricant in the region between said skirt member and said base member.

4,227,198

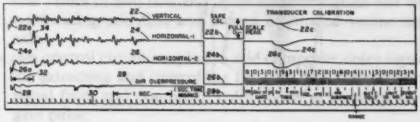
SEISMIC TRIGGERED SEISMOGRAPH

Stanley V. Preskitt, Dallas, and Larry R. Cornelius, Quinlan, both of Tex., assignors to Dallas Instruments, Dallas, Tex.

Filed Jan. 2, 1979, Ser. No. 271

Int. Cl.[2] G01D 9/00

U.S. Cl. 346—1.1 **16 Claims**



1. A seismic triggered seismograph comprising in combination:

(a) means responsive to onset of earth vibrations to record three orthogonal components of earth movement on analog side-by-side magnetic traces, and simultaneously to record an analog representation of concomitant sound traveling through the air as an additional trace, and

(b) means operable upon cessation of said earth vibrations to record at least one of said traces a sequence of numerical data values related to said earth vibrations.

4,227,199

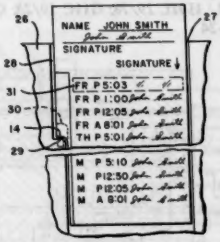
METHOD AND DEVICE FOR TIME-RECORDING

Stephen R. Sharkey, 43 Ventana Ct., Lawrence, N.Y. 11559

Filed May 9, 1979, Ser. No. 37,558

Int. Cl.[3] G01D 9/00

U.S. Cl. 346—1.1 **6 Claims**



1. Method for applying written and automatically-printed indicia to a record sheet and for correlating the time period during which said different indicia must be applied to said record sheet, comprising the steps of automatically wetting a

predetermined area of the record sheet with a color-permitting material which remains liquid on said sheet for a limited time period, automatically printing indicia on a predetermined area of said record sheet associated with said wetted area of said record sheet, and applying written indicia to said wetted area, while said color-permitting material is still liquid, using a substantially colorless writing liquid which is capable of developing colored written indicia in the presence of said liquid color-permitting liquid.

4,227,200

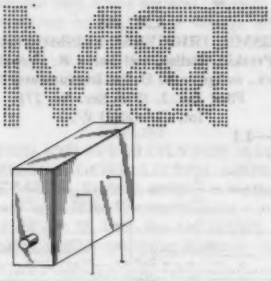
PIGMENTED JET PRINTING AND PRODUCT

Ishwar R. Mansukhani, Neenah, Wis., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed Oct. 10, 1978, Ser. No. 950,245

Int. Cl.[3] G01D *15/18*

U.S. Cl. 346—75 **2 Claims**



1. A process for information recording comprising producing a fine jet of high solids liquid containing resin, modulating the charge density of the jet by applying an electric field in accordance with the information to be recorded, directing the jet of liquid to a recording medium to record said information, while said information is still in a tacky state applying a finely divided pigment under pressure of from 1 to 90 pounds per square inch for from 1 to 95 seconds to said recorded information, thereby binding said pigment to said resin and rendering said information opaque.

4,227,201

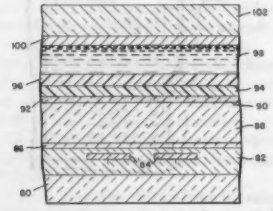
CCD READOUT STRUCTURE FOR DISPLAY APPLICATIONS

Jan Grinberg, Los Angeles; Michael Waldner, Woodland Hills, both of Calif., and Joe A. Jenney, Vienna, Va., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 796,641, May 13, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,418

Int. Cl.[3] H01L *29/78*; G11C *19/28*; G02F *1/13*

U.S. Cl. 357—24 **11 Claims**



1. A liquid crystal light valve activated by a charge-coupled device (CCD) comprising:

(a) a semiconductor substrate characterized by first and second major opposite surfaces;

(b) a CCD arrangement formed on said first major substrate surface and including a set of CCD electrodes for storage and transfer of charge carriers in charge depletion buckets adjacent to said set of CCD electrodes;

(c) a liquid crystal layer adjacent to said second major substrate surface;

(d) means for establishing within said substrate an electric field substantially below avalanche breakdown wherein the value of said field is selected to form a depletion region and an undepleted region between said first and second major substrate surfaces, said undepleted region separating said charge depletion buckets from said depletion regions; and

(e) means for biasing said CCD electrodes so that said charge carriers are transferred from adjacent to said CCD electrodes through said undepleted region to said depletion region where they are then electric-field guided without avalanching through said depletion region to said second major substrate surface without substantial lateral spreading in order to activate said liquid crystal layer.

4,227,202

DUAL PLANE BARRIER-TYPE TWO-PHASE CCD

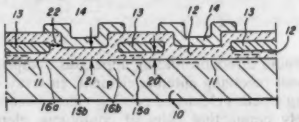
Al F. Tasch, Jr., Richardson, and Pallab K. Chatterjee, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 27, 1977, Ser. No. 846,009

The portion of the term of this patent subsequent to Feb. 6, 1996, has been disclaimed.

Int. Cl.[3] H01L *29/78, 29/04*; G11C *19/28*

U.S. Cl. 357—24 **8 Claims**



1. A charge-coupled device comprised of:

(a) a semiconductor substrate having dopant impurity atoms of a first type and a first surface;

(b) a charge-transfer channel in said substrate near said first surface;

(c) an insulating layer of non-uniform thickness on said first surface over said channel;

(d) a plurality of first electrodes spaced apart from each other and lying on said insulating layer transversely to said channel;

(e) a plurality of second electrodes lying on said insulating layer transversely to said channel in the spaces between said first electrodes;

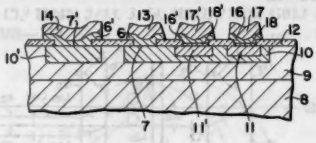
(f) a barrier region of dopant impurity atoms of said first type under each of said first and second electrodes; each of said barrier regions extending transversely across said channel and along said channel from one transverse edge of a respective one of said electrodes to a medial portion of said electrode; wherein said insulating layer underlies each of said first electrodes by a first uniform thickness, underlies each of said second electrodes by a second uniform thickness and separates each of said first electrodes from adjacent second electrodes by approximately said second thickness, with said second thickness being approximately 20% to 60% greater than said first thickness.

4,227,203

SEMICONDUCTOR DEVICE HAVING A POLYCRYSTALLINE SILICON DIODE

Hiroaki Mikoshiba, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1978, Ser. No. 882,766
Claims priority, application Japan, Mar. 4, 1977, 52-23594
Int. Cl.³ H01L 29/04, 27/04
U.S. Cl. 357—59 **6 Claims**



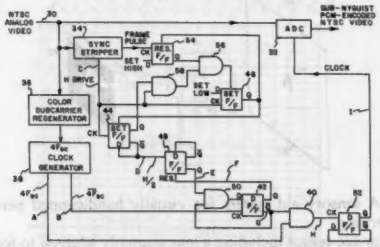
1. A semiconductor device comprising a monocrystalline silicon substrate and a polycrystalline silicon layer including a first polycrystalline film of one conductivity type formed on a major surface of said monocrystalline silicon substrate, and a second polycrystalline film of an opposite conductivity type formed on a surface of said first polycrystalline film so as to form a P-N junction between said first and second polycrystalline films, said P-N junction being substantially flat and parallel with said major surface of said monocrystalline silicon substrate and ending at a peripheral side surface of said polycrystalline silicon layer.

4,227,204

METHOD AND APPARATUS FOR PCM-ENCODING NTSC COLOR TELEVISION AT SUB-NYQUIST RATE

John P. Rossi, Stamford, Conn., assignor to CBS Inc., New York, N.Y.

Filed Sep. 21, 1978, Ser. No. 944,533
Int. Cl.² H04N 9/32
U.S. Cl. 358—13 **11 Claims**



1. A method of digitally encoding an NTSC color television signal having a color subcarrier frequency F_{sc} and a line scan frequency F_h, comprising the steps of:

generating a sampling signal having a frequency $2F_{sc}$, the sampling phase of which shifts by 180° every alternate time sequential television line;

sampling said television signal in response to the sampling signal; and

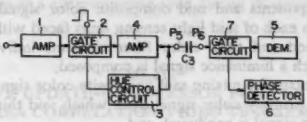
converting the sampled television signal into digital form.

4,227,205

HUE AND SATURATION CONTROL CIRCUITRY REQUIRING SINGLE COUPLING CAPACITOR

Hiroshi Gomi, Fukaya, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Oct. 14, 1977, Ser. No. 842,323
Claims priority, application Japan, Oct. 16, 1976, 51-123431
Int. Cl.² H04N 9/535
U.S. Cl. 358—28 **4 Claims**



1. A composite color signal-processing circuit for processing a time-shared composite color signal including burst and chrominance signals at distinct time periods comprising:

a vector signal generating circuit having an input coupled to said composite signal for generating first and second vector signals having different phases with respect to each other, said vector signal being generated during said burst signal period;

a vector signal synthesizing means coupled to said vector signal generating circuit for controlling the relative absolute values of said first and second vector signals and for synthesizing said first and second controlled vector signals;

a gain control circuit coupled to said composite color signal for extracting and controlling the gain of a chrominance signal from said composite color signal in response to a gate pulse;

a common load coupled to the outputs of said vector signal synthesizing means and to said gain control circuit for combining their respective outputs;

an AC coupling capacitor coupled to said common load for delivering an AC component of said combined outputs;

a first phase detector coupled to said coupling capacitor for responding to said burst signal period in response to the gate pulse; and

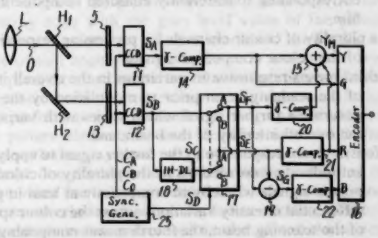
a second phase detector coupled to said AC coupling capacitor for responding to a chrominance signal in response to said gate pulse.

4,227,206

SOLID STATE TELEVISION CAMERA

Fumio Nagumo, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 11, 1978, Ser. No. 950,458
Claims priority, application Japan, Oct. 13, 1977, 52-122736
Int. Cl.² H04N 9/07
U.S. Cl. 358—44 **8 Claims**



1. A solid state television camera having a solid state image sensing device including a plurality of individual light sensing units arranged in both horizontal and vertical rows comprising:

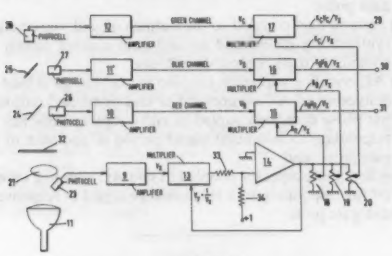
(a) a plurality of color filter elements with different transmissibilities faced with said individual light sensing units including first and second color filter elements for transmitting first and second primary color signals and third color filter elements for transmitting both of a third and said first primary color signals as a composite color signal;
(b) a switching circuit for converting line sequential signals produced from each of said light sensing units into a simultaneous color signal;
(c) an adder for adding said first and second primary color components and said composite color signal produced from each of said light sensing units faced with said first, second and third color filter elements individually by which a luminance signal is composed;
(d) a mixer for mixing said composite color signal and said first primary color signal from which said third primary color signal is produced; and
(e) a color encoder for encoding said first, second and third primary color signal components from which a composite color television signal is produced.

4,227,207

CRT FILM SCANNER WITH COMPENSATION FOR LOCAL BRIGHTNESS VARIATIONS OF SCANNING BEAM

John D. Millward, Hitchin, England, assignor to The Rank Organisation Limited, London, England

Filed Apr. 27, 1978, Ser. No. 900,489
Claims priority, application United Kingdom, Apr. 27, 1977, 52-17535
Int. Cl.[2] H04N 9/11
U.S. Cl. 358—54 **6 Claims**



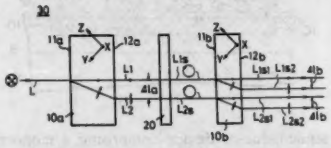
1. A flying spot film scanner apparatus for producing colour television signals from photographic film, comprising:
cathode ray tube means for producing a flying spot scanning beam of nominally constant intensity;
first means for focussing said beam onto an image plane wherein a film is located in use of said apparatus;
second means for sensing light modulated by the film to produce a plurality of television colour component signals corresponding to differently coloured components of the film;
a plurality of colour channels for processing respective ones of the colour component signals;
third means responsive to variations in the overall intensity of the scanning beam prior to modulation by the film to generate a further signal which varies with variations in the overall intensity of the beam; and
fourth means responsive to the further signal to apply different individual corrections to the plurality of colour component signals whereby to compensate at least in part for differential intensity variations across the colour spectrum of the scanning beam, the fourth means comprising means for generating individual correction signals as different proportions of the further signal and means for applying said individual corrections signals to respective ones of the colour channels.

4,227,208

OPTICAL COMB FILTER

Itsuo Takanashi, Yokohama; Koichiro Motoyama, Ninomiya; Tadayoshi Miyoshi, Yokohama; Shintaro Nakagaki, Yokohama; Sumio Yokokawa, Yokohama, and Kenichi Miyazaki, Sagamihara, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sep. 14, 1978, Ser. No. 942,283
Claims priority, application Japan, Sep. 17, 1977, 52-111841
Int. Cl.[2] H04N 9/04
U.S. Cl. 358—55 **5 Claims**



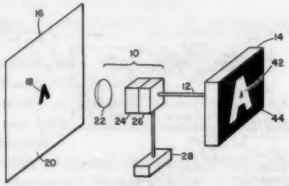
1. An optical comb filter comprising: a plurality of optical comb filter element means disposed successively in the advancing light direction, said successive element means respectively having optical comb filter characteristics for attenuating and removing specific space frequencies which do not have mutual relationships of odd-number multiples and frequencies that are respectively odd-number multiples of said specific space frequencies; and at least one phase plate means interposed between neighboring optical comb filter element means respectively in front and rear positions with respect to said light advancing direction, normal and abnormal linearly polarized light exiting from said front filter element means, said phase plate means converting said linearly polarized light into substantially circularly polarized light which enters a rear one of filter element means as incident light, said substantially circularly polarized light being divided in said rear filter element means into normal light and abnormal light exiting with mutually equal light quantity.

4,227,209

SENSORY AID FOR VISUALLY HANDICAPPED PEOPLE

David A. Warner, Cambridge, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Aug. 9, 1978, Ser. No. 932,271
Int. Cl.[2] H04N 7/00
U.S. Cl. 358—94 **24 Claims**



1. A sensory aid system for visually handicapped persons, comprising:
an image sensor including a lens assembly adapted to focus a graphic image on a plurality of detector networks, each detector network including means for converting a portion of a graphic image into an electrical signal representative of a picture element of that image, and
display means including an array of display elements wherein at least one of said display elements is coupled to a corresponding one of said detector networks wherein said image sensor further comprises a control means, said control means being operable to couple each of said drive signals to groups of one or more adjacent elements in said

detector array wherein the number of display elements in said groups is selectable.

4,227,210

RADIATION SHUTTERS

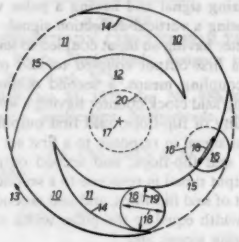
Ralph D. Nixon, Braintree, England, assignor to English Electric Valve Company Limited, Chelmsford, England

Filed Feb. 9, 1978, Ser. No. 876,266

Claims priority, application United Kingdom, Mar. 31, 1977, 13605/77

Int. Cl.[2] H04N *5/33, 3/14;* **H01L** *17/00;* **G01J** *1/00*

U.S. Cl. 358—113 **11 Claims**



1. A pyroelectric television camera arrangement including a camera tube and a rotatable radiation shutter mounted so as to be capable of modulating thermal radiation incident upon the camera tube, the shutter having a plurality of blade portions arranged symmetrically about its axis of rotation and having opening and closing edges in the shape of a spiral, the camera tube being orientated in relation to the blade portions so that the line scan direction of the television raster is substantially aligned with said opening and closing edges as the thermal radiation is modulated by rotation of the shutter.

4,227,211

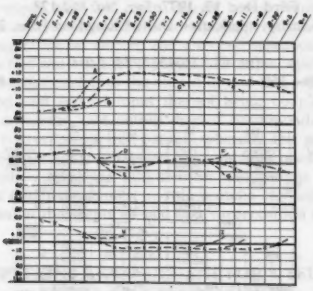
METHOD FOR ANALYZING SEASONAL GROWING CONDITIONS OF CROPS

Lynnford E. Disbrow, Kennewick, Wash., assignor to Columbia Photografix, Inc., Pasco, Wash.

Filed Sep. 22, 1978, Ser. No. 944,702

Int. Cl.[2] H06N *5/18*

U.S. Cl. 358—113 **4 Claims**



1. A method of evaluating the current growing condition of an agricultural crop within a defined field area at a selected time during its growing season, comprising the following steps:

using infrared photographic techniques to photograph the field area from an aircraft under known daylight conditions;

producing a color photographic image representative of the infrared radiation emanated from the field area as photographed;

electronically integrating and measuring the average color density values contained in the photographic image over the total defined field area for a plurality of selected colors to arrive at a measured density value for each selected color;

and comparing the measured density value for each selected color to experientially derived density values for the respective colors representative of optimum conditions for the crop at a corresponding time during its growing season.

4,227,212

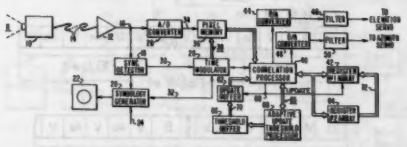
ADAPTIVE UPDATING PROCESSOR FOR USE IN AN AREA CORRELATION VIDEO TRACKER

Martin G. Woolfson, and Floyd C. Bentley, both of Baltimore, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 21, 1978, Ser. No. 944,523

Int. Cl.[2] H04N *7/18*

U.S. Cl. 358—126 **16 Claims**



1. In an area correlation video tracker including an electro-optical sensor which generates frames of video information representative of an intensity pattern of the field of view of said electro-optical sensor corresponding to discrete intervals in time; means for partitioning a preselected portion of said generated video frames into an array of picture elements, the value of each picture element being representative of the gray level intensity corresponding to its index in said array, said array being additionally partitioned into a predetermined number of indexed subarray zones; means for acquiring the gray level values of the picture element of a selected first subarray zone corresponding to an acquisition video frame; and correlation means for cross-correlating, based on a predetermined metric correlation function, the gray level values of the picture elements of said selected first subarray zone with the picture element gray level values of said partitioned subarray zones of each of a number of video frames generated subsequent said acquisition video frame to identify a second subarray zone of picture elements in each of said number of subsequently generated video frames and to derive a cross-correlation metric value associated with each of said identified second subarray zones, the improvement of an adaptive updating means comprising:

means operative to perform an autocorrelation of the gray level values of the picture elements of said selected first subarray zone with the gray level value of the picture elements of an at least one predetermined third subarray zone of said acquisition video frame in accordance with said predetermined metric correlation function to derive a reference threshold correlation metric value and to further perform an autocorrelation of the gray level values of the picture elements of said identified second subarray zone with the gray level values of the picture elements of at least one predetermined fourth subarray zone of the same video frame in accordance with said predetermined metric correlation function to derive another threshold correlation metric value, said another threshold correlation metric value being derived for each of said number of subsequently generated video frames;

means operative to render an update condition based on the results of a comparison between one derived cross-corre-

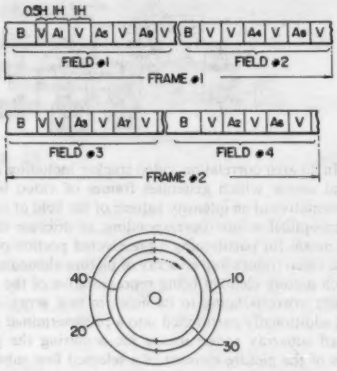
lation metric value and said reference threshold correlation metric value, said update condition causes the gray level values of the picture elements of said selected first subarray to be replaced with the gray level values of the picture elements of said identified second subarray corresponding to said one cross-correlation metric value and causes said reference threshold correlation metric value to take on the value of said another threshold correlation metric value derived from the video frame corresponding to said one cross-correlation metric value, whereby subsequent cross-correlation processing will be performed with the updated gray level values of the picture elements of the selected first subarray and updated threshold correlation metric value.

4,227,213

VIDEO SIGNAL RECORDING SYSTEM

Teruhiko Isobe, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 16, 1978, Ser. No. 961,172
Claims priority, application Japan, Nov. 16, 1977, 52-137630
Int. Cl.[2] H04N *5/76*
U.S. Cl. 358—128.5 **13 Claims**



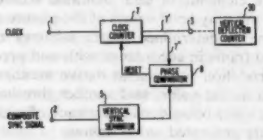
1. In a method of recording stationary video images on a convolution video track of a video disk, in which a stationary image video signal of at least one frame is optically recorded on said convolution video track every revolution of the disk, an improvement comprising the step of recording an audio signal on portions of the same said convolution video track, said portions corresponding to a predetermined number of lines of said video signal.

4,227,214

DIGITAL PROCESSING VERTICAL SYNCHRONIZATION SYSTEM FOR A TELEVISION RECEIVER SET

Hiroshi Morito, and Kenji Yamashita, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1978, Ser. No. 924,318
Claims priority, application Japan, Jul. 13, 1977, 52-84384
Int. Cl.[2] H04N *5/04, 5/10*
U.S. Cl. 358—148 **6 Claims**



1. A vertical synchronization system comprising:

a first input terminal for receiving a composite synchronizing signal;

a vertical synchronization separator for separating a vertical synchronizing signal from said composite synchronizing signal, said vertical synchronization separator having an input coupled to said first input terminal and an output for deriving said vertical synchronizing signal;

a second input terminal for receiving a clock input signal having a frequency equal to an arbitrary positive integer N times as high as the frequency of a horizontal synchronizing signal separated from said composite synchronizing signal;

an output terminal for deriving a first output signal having a repetition frequency substantially equal to said vertical synchronizing signal and having a pulse width required for generating a vertical deflection signal;

a clock counter having an input coupled to said second input terminal, a first output coupled to said output terminal through coupling means, a second output, and a reset signal input, said clock counter having a series connection of a plurality of flip-flops, said first output deriving said first output signal in response to a first set of at least one output of said flip-flops, said second output deriving a second output signal in response to a second set of at least one output of said flip-flops, and said second output signal having a width equal to the pulse width of said vertical synchronizing signal; and

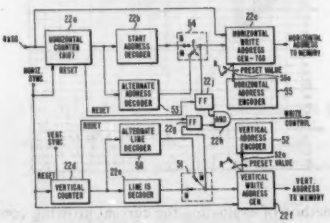
a phase comparator having a first input coupled to said output of said vertical synchronization separator, a second input coupled to said second output of said clock counter, and a reset signal output coupled to said reset signal input of said clock counter, the circuit path from said second output to said reset signal input of said clock counter through said phase comparator being electrically independent from said coupling means, said phase comparator comparing phases of said vertical synchronizing signal and said second output signal and producing a reset signal at said reset signal output at the time when said phase comparator detects that one of said vertical synchronizing signal and said second output signal exists while the other does not exist, and said reset signal being applied to said clock counter for restarting the counting operation thereof.

4,227,215

TELEVISION PICTURE POSITIONING APPARATUS

Thomas M. Gurley, Maple Shade; Robert S. Hopkins, Jr., Marlton, and Wolf-Dieter Fischer, Turnersville, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 19, 1977, Ser. No. 862,178
Claims priority, application United Kingdom, Mar. 21, 1977, 11905/77
Int. Cl.[3] H04N *5/14, 5/04*
U.S. Cl. 358—160 **8 Claims**



1. A television picture positioning apparatus for use with a television video synchronizer of the type including an address generator responsive to input composite television signals for sampling the active video at a given rate and storing the active video samples in nonvarying locations of a memory according

to predetermined addresses from the address generator and for detecting sync timing, said address generator providing addresses at said given rate and being started a predetermined time following detected sync timing; and means responsive to the stored samples for providing a video like that of the incoming video, said apparatus comprising:

means coupled to said address generator for delaying the start of the address generator in accordance with a selected time period following the horizontal blanking to move the picture to the left, and

means for presetting the address generator at a selected address of a higher value or a value which normally stores active picture samples to the right of the raster to move the picture to the right.

4,227,216

GAMMA CORRECTION CIRCUIT FOR TELEVISION

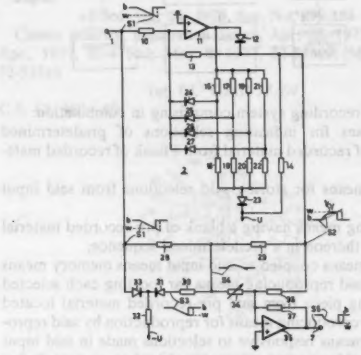
Hendrik Blom, Breda, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 31, 1978, Ser. No. 956,308

Claims priority, application Netherlands, Nov. 28, 1977, 7713052

Int. Cl.[2] H04N 5/20

U.S. Cl. 358—164 **7 Claims**



1. A gamma correction circuit for television having an input, to which a signal to be gamma corrected is applied, and an output, wherein said gamma correction circuit comprises a gamma corrector coupled to said circuit input; a signal limiter also coupled to said circuit input; a first superposition stage, for forming a correction signal having a first and a second input and an output, said first input thereof being coupled to said gamma corrector and said second input thereof being coupled to said signal limiter circuit; and a second superposition stage having a first and a second input and an output, said first input thereof being coupled to the output of said first superposition stage and said second input thereof being coupled to said gamma corrector, said output thereof corresponding to said gamma correction circuit output, whereby the gamma-corrected output signal is formed by combining in said second superposition stage the output from said gamma corrector, having a minimum gamma, and the gamma-increasing correction signal at the output of said first superposition stage.

4,227,217

MULTIPLEXING ARRANGEMENT FOR A TELEVISION SIGNAL PROCESSING SYSTEM

Alvin R. Balaban, Lebanon, and Steven A. Steckler, Clark, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 26, 1979, Ser. No. 15,205

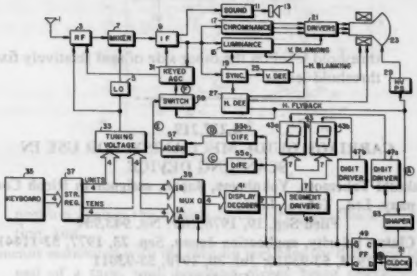
Int. Cl.[3] H04N 5/50

U.S. Cl. 358—192.1 **10 Claims**

1. In a television receiver including signal processing means for generating a video signal including picture and synchronization signal components, deflection means responsive to said synchronization signal components for generating horizontal and vertical deflection signals including horizontal trace and retrace intervals and vertical trace and retrace intervals for controlling the deflection of at least one electron beam and horizontal and vertical blanking pulses in substantial synchronization with said horizontal and vertical retrace intervals, respectively, said signal processing means including blanking means for inhibiting the generation of said electron beam in response to said horizontal and vertical blanking pulses, apparatus comprising:

information generating means for generating at least first and second groups of binary signals representing first and second information components;

conversion means for converting said first and second groups of binary signals when received to first and second groups of display control signals, respectively;



first and second display means for displaying first and second symbols related to said first and second information components, respectively, in response to said first and second groups of display control signals, respectively, when enabled; and

switching means coupled to said deflection means for generating a multiplexing signal having pulses with transitions occurring during selected ones of said blanking pulses of one of said horizontal and vertical deflection signals; and

multiplexing means for periodically coupling said first and second groups of binary signals to said conversion means and respectively enabling said first and second display means to respond to said first and second groups of display control signals, respectively, in response to pulses of said multiplexing signal.

4,227,218

METHOD AND APPARATUS FOR GENERATING A DIGITAL FACSIMILE SIGNAL

John M. Vandling, Pleasantville, N.Y., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 14, 1978, Ser. No. 969,581

Int. Cl.[2] H04N 1/40

U.S. Cl. 358—282 **12 Claims**

1. A facsimile transmitter comprising:

sensor means for sensing dark-light variations in a document and generating a video analog signal representing said dark-light variations;

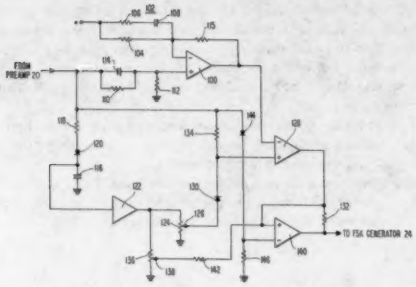
conversion means coupled to said sensor means for establishing a multi-level digital signal representing said dark-light variations; and

transmission means coupled to said conversion means for generating transmission signals representing said digital signals;

said conversion means comprising

fixed threshold means for producing one of the multi-levels of said digital signal when the magnitude of said analog signal lies on one side of a relatively fixed threshold level; and

variable threshold means for producing said multiple levels of said digital signal when the magnitude of the analog signal moves to opposite sides of a variable



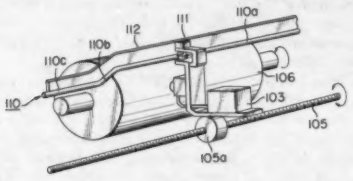
threshold level on the other side of said relatively fixed threshold level.

4,227,219

CARRIAGE GUIDE MECHANISM FOR USE IN SCANNING DEVICE

Takeshi Takemoto, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 19, 1978, Ser. No. 943,939
Claims priority, application Japan, Sep. 23, 1977, 52-114414; Jul. 30, 1978, 53-93010; Jul. 30, 1978, 53-93011
Int. Cl.[2] H04N *1/06*
U.S. Cl. 358—289 **2 Claims**



1. A carriage guide arrangement for use in a device for scanning a surface of a recording medium supported by a cylindrical drum, said arrangement comprising:

a carriage capable of bidirectional linear movement along a path having at least a portion thereof parallel to said surface;

an image transducing head mounted on said carriage;

an enlongated first guide member extending in the direction of linear movement of said carriage,

said carriage being bidirectionally rotatably and translatably mounted on said first guide member;

a second guide member in juxtaposition with said first guide member for defining a first rotational position of said carriage in the region adjacent said record medium surface and a second rotational position of said carriage in the region beyond the ends of said drum;

means for biasing said carriage toward said second guide member so that said carriage rotates between said first and second rotational positions as said carriage traverses the ends of said drum; and

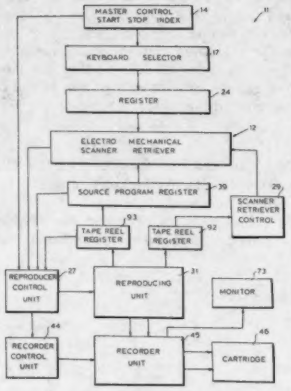
a carriage bearing member mounted on said carriage for engaging said second guide member to keep said transducing head at a desired distance from said record medium surface, corresponding to said first rotational position, between the ends of said drum, and for keeping said transducing head at said second rotational position beyond the ends of said drum.

4,227,220

TAPE RECORDING SYSTEM

Hill Brown, 1232 Rialto Ave., Sebring, Fla. 33870, and Jack M. Pippin, P.O. Box 254, Altamonte Springs, Fla. 32701

Filed May 2, 1977, Ser. No. 793,086
Int. Cl.[2] G11B *5/86, 15/22*
U.S. Cl. 360—15 **7 Claims**



1. A tape recording system comprising in combination:

input means for indicating selections of predetermined pieces of recorded material from a bank of recorded material;

memory means for storing said selections from said input means;

reproducing means having a blank of pre-recorded material located thereon in a predetermined sequence;

scanning means coupled to said input means memory means and to said reproducing means for locating each selected recording piece from said pre-recorded material located on said reproducing means for reproduction by said reproducing means responsive to selections made in said input means, said scanning means scanning through a predetermined cycle to retrieve each selected piece and returning to a rest position, said scanning means being an electromechanical scanner retriever having a moving member scanning a plurality of contacts and selecting each contact having a voltage thereon;

recording means coupled to said reproducing means for recording each selected recorded piece played by said reproducing means;

control means coupled between said scanning means and said reproducing means for controlling said recording and reproducing means responsive to said scanning means reaching a selected piece to be recorded whereby a recording can be made having only preselected pieces from a bank of pre-recorded material; and

a monitor operatively connected to said reproducing means for reproducing the material being recorded during the recording.

4,227,221

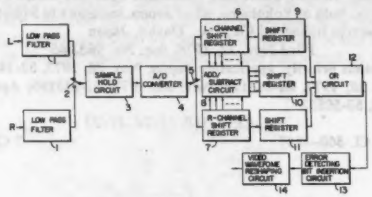
PCM RECORDING APPARATUS

Yasunori Kanazawa, Hachioji, Japan, assignor to Hitachi, Ltd., Japan

Filed Nov. 21, 1978, Ser. No. 962,769
Claims priority, application Japan, Nov. 21, 1977, 52-138974
Int. Cl.[2] G11B *5/00, 5/02*
U.S. Cl. 360—32 **4 Claims**

1. A PCM recording apparatus comprising first means for deriving digitized sterophonic sound signal samples for left and right channels, each of said digitized samples including error

detecting bits, second means for deriving a signal indicative of correlation such as sum or difference of the digitized left and



right channel signals including the error detecting bits, and third means for recording the signals from said first and second means.

4,227,222

HAND-OPERATED TAPE RECORDER FOR DICTATION

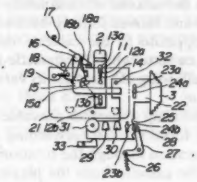
Masaaki Sato, and Minoru Kobayashi, both of Hachioji, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Apr. 24, 1978, Ser. No. 899,156

Claims priority, application Japan, Apr. 25, 1977, 52-47561; Apr., 1977, 52-47562; May 6, 1977, 52-51809; May 6, 1977, 52-51810

Int. Cl.³ G11B *15/04*

U.S. Cl. 360—60 **4 Claims**



1. A tape recorder for repeatedly recording and stopping a recording tape by switching an operating button as a recording button is locked in a recording state, comprising:

an operating button for controlling the mode of operation of the recorder and adapted to being switched between a play mode, a stop and a rewind mode;

a recording button for placing said recorder in a recording state;

a recording member connected to the recording button;

an engaging member for engaging said recording member for locking said recording button in the recording state of the recorder;

an erroneous erase-preventing member for releasing engagement of the engaging member upon the condition of the absence of a tape cassette in a tape loading chamber; and

an operating lever member for releasing the engagement of the engaging member, said member responsive to switching of the operating button to the rewind mode.

4,227,223

AUTO-REPEAT MECHANISM FOR CASSETTE TAPE RECORDER

Yoshihiro Magata, Kawagoe; Kobun Yoshida, Kamifukuoka, and Itsuo Kato, Sayama, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 26, 1978, Ser. No. 954,881

Claims priority, application Japan, Oct. 28, 1977, 52/129350

Int. Cl.² G11B *15/44, 19/26*

U.S. Cl. 360—73 **14 Claims**

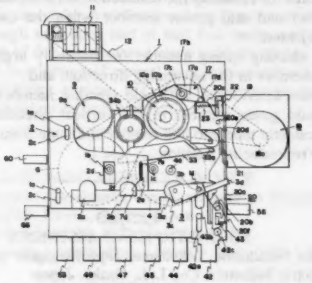
1. An auto-repeat mechanism for a cassette tape recorder including fast forward and rewind levers on a chassis and take-up and supply reel bases rotatably installed on the chassis, which comprises

a fast feed unit pivotally mounted on the chassis for selectively transmitting rotational force to the take-up or supply reel base in response to actuation of the fast forward or rewind lever,

an auto-repeat lever pivoted to the chassis,

means associated with the auto-repeat lever for biasing said fast feed unit into cooperation with the supply reel base to provide rewind operation,

means for positively displacing said fast feed unit to a neutral



position against the biasing force during playback operation, and

means associated with the take-up reel base for detecting the end of a tape, said detecting means being operatively connected to said positive displacing means,

wherein with the auto-repeat lever actuated, the positive displacing means keeps said fast feed unit in the neutral position during the playback operation, and when the detecting means detects the end of the tape, the detecting means cancels the positive displacing means, thereby allowing said biasing means to move the fast feed unit into the rewind position.

4,227,224

CASSETTE TAPE RECORDING/REPRODUCING APPARATUS

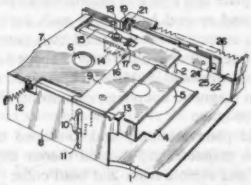
Hiroyuki Umezawa; Yukio Ito; Kazuki Takai, and Hitoshi Okada, all of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1979, Ser. No. 17,373

Claims priority, application Japan, Mar. 6, 1978, 53/27451[U]; Mar. 14, 1978, 53/29153; Mar. 14, 1978, 53/29154; Mar. 17, 1978, 53/30543; Mar. 30, 1978, 53/35991

Int. Cl.² G11B *15/24, 15/10*

U.S. Cl. 360—96.5 **22 Claims**



1. A cassette tape recording/reproducing apparatus which comprises:

a guide member for guiding horizontally a recording/reproducing cassette tape into the interior of said apparatus;

an ejecting member and a slide member provided along a side of said guide member and movable in the forward and the backward direction of said apparatus;

a lock member for locking said ejecting member and said slide member at their respective retired positions;
means for allowing one of said ejecting member and said slide member to move backwardly and forwardly while the other is locked by said lock member;
a power member provided along said side of the guide member and movable backwardly and forwardly;
a set spring member for normally urging said power member in the retreating direction;
means for disengageably connecting said slide member to said power member;
means for releasing the connection between said slide member and said power member when the cassette tape is ejected;
an ejecting spring member for normally urging said slide member in the advancing direction; and
means interlocked with said ejecting member for moving said guide member in the vertical direction to set the cassette tape into and remove the same from a recording-/reproducing position.

4,227,225

MAGNETIC HEAD ASSEMBLY

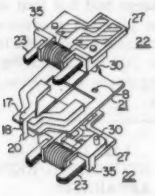
Kowhei Nishikawa, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 8, 1978, Ser. No. 903,796

Claims priority, application Japan, May 12, 1977, 52-54898; May 13, 1977, 52-55628; May 13, 1977, 52-55629; May 13, 1977, 52-55630; May 13, 1977, 52-55631; Jun. 2, 1977, 52-65358

Int. Cl.[3] G11B *5/12, 5/20*

U.S. Cl. 360—128 **7 Claims**



1. A magnetic head of the type having a plurality of head elements and coil windings comprising:
a shield plate assembly comprising first and second nonmagnetic spacer plates disposed on each side of a magnetic plate, each of said spacer plates containing an aperture for receiving the windings of a head coil and having an auxillary slot;
first and second U-shaped cores on the free side of each spacer plate and first and second back cores;
said first and second back cores each having a head coil winding supported thereon, said back cores being located on the free side of each of said U-shaped cores with said head coils disposed within said apertures, said back cores being in magnetic coupling relationship with an adjacent U-shaped core;
said shield plate assembly and U-shaped cores having a common magnetic gap located therein adjacent an edge thereof and remote from said head coils;
a spacer located within said common magnetic gap for maintaining the spacing of said magnetic gap; and
a shield case for housing said shield plate assembly, back cores, and U-shaped cores, said shield case having an opening for exposing said magnetic gap to a record medium, wherein two magnetic circuits are formed, each having a gap which is in precise alignment with the remaining gap but separated therefrom.

4,227,226

CASSETTE TAPE PLAYER

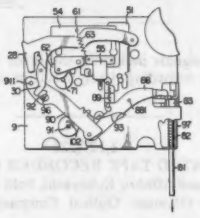
Takashi Tashiro, Kawasaki; Manabu Sugai, and Akira Matsumoto, both of Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Inc., Osaka, Japan

Filed Nov. 22, 1978, Ser. No. 963,045

Claims priority, application Japan, Nov. 28, 1977, 52-143197; Nov. 28, 1977, 52-143198; Nov. 28, 1977, 52-143199; Apr. 26, 1978, 53-50552

Int. Cl.[2] G11B *15/24, 21/22*

U.S. Cl. 360—137 **7 Claims**



1. In a cassette tape player wherein a cassette tape is horizontally inserted and then vertically moved into a playing position and is ejected by a reverse vertical and then horizontal movement of the cassette tape, and which provides a fast forwarding operation and a rewinding operation, said cassette tape player includes a stopper means which swings through a predetermined angle when the cassette is horizontally inserted a predetermined distance and moves slightly backwards in the horizontal direction opposite to the cassette inserting direction together with the cassette when the cassette inserting force is relieved, thereby allowing the cassette to vertically move into the playing position;
a first means, including a member movable in one direction and rotatable, to set the fast forwarding operation or the rewinding operation through the rotation of said member, and to eject the cassette from the playing position or to reset to the playing mode from the fast forwarding operation or the rewinding operation through the movement of said member in said one direction;
a second means, operable independent of said first means, for detecting stopping of movements of the tape and to eject the cassette from the playing position when said member is displaced in said one direction or to reset to the playing mode from the fast forwarding operation or the rewinding operation, when said member is not displaced.

4,227,227

PROTECTIVE CIRCUIT FOR A POWER AMPLIFIER

Hiroyasu Yamaguchi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 6, 1978, Ser. No. 922,591

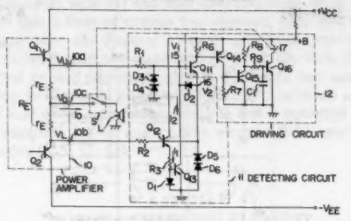
Claims priority, application Japan, Jul. 12, 1977, 52-83266; Jul. 12, 1977, 52-83268

Int. Cl.[2] H02H *7/20*

U.S. Cl. 361—86 **8 Claims**

1. A protective circuit for a push-pull power amplifier including a load current-detecting resistor connected between two transistors jointly constituting said power amplifier for detecting the load current of said power amplifier; a load connected to said power amplifier through said load current-detecting resistor; a switch for shutting off said load current; a load resistance detecting circuit for detecting the resistance of said load; and a driving circuit for causing said switch to be opened by an output of said load resistance detecting circuit when the resistance of said load falls to a lower level than prescribed, characterized in that said load resistance-detecting circuit comprises circuit means for drawing out a first signal from one end of said load current-detecting resistor; circuit

means for drawing out a second signal of lower potential than said first signal from the other end of said load current-detecting resistor; and control circuit means, which, when said load has a higher resistance than prescribed, holds the potential difference between said first and second signals to be lower than a predetermined level by causing the potential of said first singal to drop as a result of control on said first signal by said



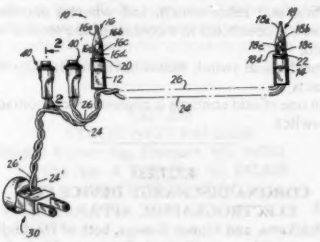
second signal of lower potential than said first signal, and, when said load has a lower resistance than prescribed, increases the potential difference between said first and second signals over said predetermined level; and said driving circuit is supplied with said first and second signals, and includes circuit means for opening said switch, when the potential difference between said first and second signals has a larger value than said predetermined value.

4,227,228

MINIATURE SOCKETED FUSE FOR A DECORATIVE STRING OF SERIES-CONNECTED MINIATURE INCANDESCENT LAMPS

Paul S. Y. Cheng, P.O. Box 5714, Kowloon, Hong Kong, assignor to Albert V. Sadacca, Chicago, Ill. and Paul S. Y. Cheng, Kowloon, Hong Kong

Filed Dec. 21, 1978, Ser. No. 972,035
Int. Cl.[2] A47G *33/16*; H01H *85/54*
U.S. Cl. 361—104 **15 Claims**



15. An improved electrical fuse comprising:

(a) a fuse socket having fire-resistant and electrically-insulating wall portions bounding an elongated interior compartment which has an open end, and a pair of electrical contacts mounted in spaced-apart relationship within said compartment;

(b) an elongated fuse body insertable with frictional engagement into said compartment through said open end thereof, said fuse body having fire-resistant and electrically-insulating wall portions bounding a bore which has a base wall and an open end at one axial end region of said fuse body, and bounding a pair of interior passageways which extend from said base wall in direction lengthwise of said fuse body to the other opposite axial end region thereof;

(c) a bendable, electrically-conductive metallic fuse wire of uniform diameter on said fuse body, said fuse wire having a central wire portion located in said bore adjacent said base wall thereof, a pair of intermediate wire portions each located in and extending through a respective passageway, and a pair of end wire portions each bent generally rearwardly in a direction from said other axial end region of said fuse body towards said one axial end region thereof.

(i) each bent end wire portion overlying the outer surface of said fuse body and engaging the respective contacts in said sockets to thereby establish an electromechanical connection therewith when said fuse body is inserted into said compartment of said socket;

(d) keying means on said fuse socket and said fuse body for properly locating the latter in the former; and

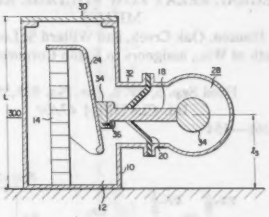
(e) a fuse plug insertable with frictional engagement into said bore through said open end of said fuse body, said fuse plug being of fire-resistant and electrically-insulating material and overlying said central wire portion of said fuse wire to thereby enclose the latter in an environment which is resistant to heat and fire.

4,227,229

LIGHTNING ARRESTER DEVICE

Mitsumasa Imataki, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 20, 1979, Ser. No. 22,360
Claims priority, application Japan, Mar. 20, 1978, 53/42070[U]
Int. Cl.[2] H02H *9/04*
U.S. Cl. 361—117 **11 Claims**



1. A lightning arrester device comprising a housing, a main arrester body disposed within said housing axially thereof, a first electrical conductor extending from a higher voltage end of said main arrester body in a direction of length of said main arrester body to be disposed along said main arrester body, and a second electrical conductor connected to said main arrester body through said first electrical conductor to be disposed substantially perpendicularly to the longitudinal axis of said main arrester body.

4,227,230

SWITCH MODE DRIVER

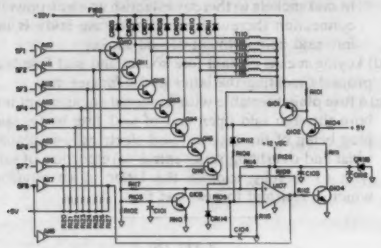
William E. Bray, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 19, 1978, Ser. No. 943,822
Int. Cl.[3] H01H *47/32*
U.S. Cl. 361—152 **12 Claims**

1. A wire matrix switch mode driver for connection to a DC source of power for driving the armatures of a plurality of solenoids that are selectively connected across and disconnected from the DC source, including means for providing enable signals for a predetermined time for selecting each solenoid, comprising:

(a) enabling means connected to the plurality of solenoids and operatively connected to receive the enable signals and responsive thereto to provide a current path for each of the selected solenoids both when the plurality of solenoids is connected across the DC source and when it is disconnected from the DC source;

(b) a power switch adapted to drive any or all of the plurality of solenoids, connected to the DC source of power and to the plurality of solenoids, and having control means for permitting the power switch to close, thereby connecting the plurality of solenoids to the DC source and for permitting the power switch to open, thereby disconnecting the plurality of solenoids from the DC source; and



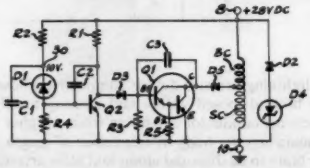
(c) timing means responsive to the means for providing enable signals and connected to the control means to permit the power switch to open after it has been closed a predetermined time, and to close after it has been open a predetermined time.

4,227,231

INTEGRAL RELAY LOW VOLTAGE RETENTIVE MEANS

James E. Hansen, Oak Creek, and Willard S. Lorenz, Oconomowoc, both of Wis., assignors to Eaton Corporation, Columbus, Ohio

Filed Sep. 5, 1978, Ser. No. 939,858
Int. Cl.[2] H01H *47/04*
U.S. Cl. 361—154 **12 Claims**



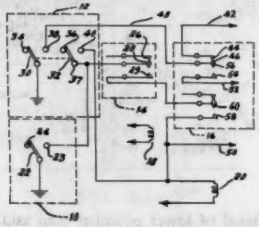
1. A D.C. actuatable electromagnetic device comprising:
a D.C. supply voltage source;
a low resistance boost coil and a higher resistance operating coil for said device connected for energization directly across said source;
solid state switching means for by-passing said operating coil and connecting said boost coil across said source and being effective when turned on for causing energization of said boost coil at high current across said source to provide a strong magnetic field for actuation of said electromagnetic device and being alternatively effective when turned off for reestablishing energization of said operating coil in series with said boost coil at lower current directly across said source to maintain said electromagnetic device actuated at normal supply voltage value;
and means for controlling said solid state switching means comprising:
control means responsive to drop in said supply voltage below a predetermined value for quickly turning said solid state switching means on thereby to energize said boost coil at high current across said source to prevent intermittent de-activation or chattering of said electromagnetic device.

4,227,232

CLUTCH PROTECTION CIRCUIT

Jonathan M. Goode, Lexington, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 806,434, Jun. 14, 1977, abandoned. This application Mar. 8, 1979, Ser. No. 18,696
Int. Cl.[3] H02H *3/24*
U.S. Cl. 361—191 **6 Claims**



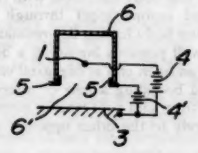
1. A protection circuit for use in devices having cyclic mutliple clutch system including, an AC power supply, a motor control means and clutch drive motor, a feed control means and feed clutches, a protection cycle generator and data clutches, the improvment comprising:
a source of direct current power;
a first electromagnetic relay switch having an electromagnet and a plurality of switch contacts;
wherein one of the contacts is connected to the motor control means, the feed control means and the protection cycle generator and;
wherein another of the contacts is connected to the motor control motors and feed control means;
a second electromagnetic relay switch having an electromagnet and a plurality of switch contacts;
wherein one of the contacts is connected to a contact of the first said relay switch;
a biased switch having a plurality of switch contacts, wherein one of the contacts is connected to a contact of the first said relay switch, and wherein another of the contacts is connected to a contact of the second said relay switch;
and a mechanical switch means having a plurality of switch contacts;
wherein one of said contacts is connected to a contact of said bias switch.

4,227,233

CORONA DISCHARGE DEVICE FOR ELECTROGRAPHIC APPARATUS

Masaji Nishikawa, and Muneo Kasuga, both of Hachioji, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Sep. 30, 1977, Ser. No. 838,233
Claims priority, application Japan, Oct. 1, 1976, 51/117118
Int. Cl.[2] G03G *15/00*
U.S. Cl. 361—225 **8 Claims**



1. In a corona discharge device for electrographic apparatus employing a corona discharge wire, a field electrode for estab-

lishing a backing electric field and a high voltage source connected between said corona discharge wire and said field electrode, the improvement comprising: two corona electric field establishing electrodes (5, 5; 13, 13) are provided without any other electrically conductive electrode, said two electrodes (5, 5; 13, 13) being formed of two thin bar-shaped conductors, spaced apart from each other and arranged between said corona discharge wire (1) and said field electrode (3) in such a position that a flow of corona ions directed from said corona discharge wire (1) directly toward said field electrode (3) passes between said two electrodes (5, 5; 13, 13) without being disturbed by said two electrodes (5, 5; 13, 13), and means for applying an electrical potential intermediate between a potential of said corona discharge wire (1) and a potential of said field electrode (3) to said corona electric field establishing electrodes (5, 5; 13, 13).

4,227,234

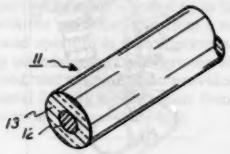
CORONA CHARGING ELEMENT

Donald A. Seanor, Pittsford, and Judy P. Nagel, Romulus, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 3, 1978, Ser. No. 921,421

Int. Cl.² H05F *3/04*

U.S. Cl. 361—229 **25 Claims**



2. An improved corona discharge member of the type having an inner conductive electrode and an outer dielectric coating made by the process comprising applying stress to the inner conductive electrode; coating the inner conductive electrode with a dielectric coating capable of being compressed, said dielectric being in a molten state; cooling the dielectric after it has wet the surface of the inner conductive electrode; and releasing the stress on the inner conductive electrode, whereby the inner conductive electrode contracts causing a compression of the outer dielectric coating.

4,227,235

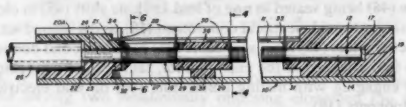
STATIC NEUTRALIZER

Peter Bishop, 1 Varney Sq., Freeport, Me. 04032

Filed Apr. 3, 1978, Ser. No. 893,059

Int. Cl.² H01T *19/04*

U.S. Cl. 361—230 **16 Claims**



1. A static electric neutralizer comprising a bar in the form of a U-shaped channel of a predetermined length, a cable extending lengthwise thereof, the ratio between the width of the channel and the diameter of the cables within the approximate range of from 2.5:1 to 3.5:1, a series of discharge devices each including a portion of substantial length mounted on the insulation of the cable and capacitatively coupled to the conductor thereof and at least one emitter point, a series of supporting and spacing insulators within said channel through which the cable extends, one insulator between each two discharge devices against which proximate ends of the devices are seated, a dead end insulator at one end of the bar receiving an end of said cable and against which one end of the proximate device is seated, a cable end insulator at the other end of the channel through which the cable extends and against which the proximate device is seated, said dead end and cable end insulator anchored to said channel, means connecting at least some of said spacing insulators to said channel to hold said cable in a predetermined position out of contact with said channel and equidistant from the side walls thereof, and said insulators and devices including interengaged portions by which the seated ends of the devices are so held as to position and maintain all of said emitter points aligned and disposed outwardly and spaced equally from said side walls leaving said devices between said portions bare and visually exposed through the channel opening.

4,227,236

FLEXIBLE BODY FOR USE IN LIQUID LEVEL INDICATING APPARATUS

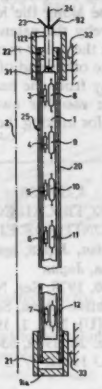
Wolfgang Kübler, Industriestrasse 31, Ch-6300 Zug, Switzerland

Filed Apr. 3, 1979, Ser. No. 26,672

Claims priority, application Switzerland, Apr. 13, 1978, 3982/78

Int. Cl.² H01H *35/18*

U.S. Cl. 361—331 **16 Claims**



1. In an apparatus for ascertaining the upper level of a supply of flowable material which is confined in a vessel and wherein a switch-actuating element floats on said supply of flowable material, the combination of an elongated tubular sheath consisting of flexible insulating material; an elongated carrier consisting of flexible insulating material and being sealingly confined in said sheath; and a plurality of electrical components on said carrier, said components including a row of spaced-apart electric switches which extend in the longitudinal direction of said carrier and each of which is actuatable by said element, said carrier having regions disposed between the switches of said row and being readily flexible without damage to said components so as to allow for conversion of said carrier and said sheath into a package whose maximum dimension is a small fraction of the length of said sheath.

4,227,237

ELECTRONIC COMPONENT CABINET

Terrence H. Matthews, and Brian K. White, both of Ottawa, Canada, assignors to Mitel Corporation, Kanata, Canada

Filed Aug. 14, 1978, Ser. No. 933,539

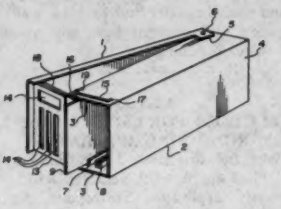
Claims priority, application Canada, May 24, 1978, 303988

Int. Cl.² H02B *102*

U.S. Cl. 361—415 **10 Claims**

1. A cabinet for housing at least one printed circuit board comprising a base member, an elongated generally U-shaped cover member having a pair of legs adjoining an outer surface,

having an open side generally facing the base member, and having at least one open end, a pair of parallel channel members disposed opposite and facing each other along the inside of the legs of the cover member parallel to the outer surface, one end of each of the channel members facing the open end of the cover member, means for hinging the other end of the cover member relative to the base whereupon said open end can be swung away from the base, means for latching the open end of the channel member in position against the base and in a predetermined alternative position away from the base, one



of the legs containing an enclosed narrow slot extending along one leg about parallel to said open end of the cover member, and the means for latching comprising a spring wire extending outwardly from the base along the leg, having an extension bent into the slot, whereby the extension is located adjacent one end of the slot with the cover member in position against the base and adjacent the other end of the slot with the cover member in position away from the base, thus limiting further movement of the cover member away from the base, and further including means for locking the extension in position at either end of the slot.

4,227,238

MOUNTING AND ELECTRICAL CONNECTION MEANS FOR OPERATION UNIT FOR ELECTRIC DEVICES

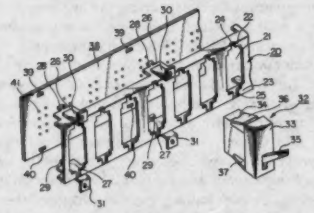
Masashi Saito, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Sep. 18, 1978, Ser. No. 942,969

Claims priority, application Japan, Sep. 28, 1977, 52-115515; Sep. 28, 1977, 52-129248[U]; Nov. 1, 1977, 52-145828[U]; Jan. 20, 1978, 53-4670[U]; Jan. 20, 1978, 53-4671[U]

Int. Cl.[2] H05K *7/18, 1/14*

U.S. Cl. 361—415 **22 Claims**



1. An operation unit for electric devices comprising

a plurality of electric operation components each having at least one electric terminal,

a chassis provided with a plurality of mounting apertures receptive of said electric operation components,

at least one printed circuit base block comprised of a first plate portion having at least a printed circuit and a second plate portion bent rearwards from said first plate portion, said first plate portion facing said chassis and having at least one through hole receptive of said electric terminal of said electric operation component and in communication with an electrically conductive layer forming said printed circuit, and said second plate portion being provided with at least one printed circuit,

said first and second plate portions having respective side fringes, means coupling said chassis to said printed circuit base block including a holder firmly but separably in engagement with said side fringes of said first and second plate portions, and

means for mounting said chassis to a panel of an electric device.

4,227,239

WIRE ROUTING CHANNEL

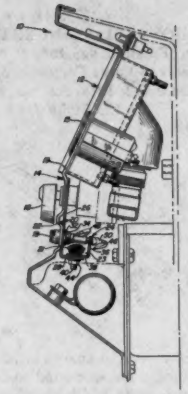
Ronald G. Boyer, Peoria, and Arthur E. Olt, Jr., Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00226, §371 Date Apr. 12, 1979, §102(e) Date Apr. 12, 1979

This PCT application Filed Apr. 12, 1979, Ser. No. 83,995

Int. Cl.[3] H02B *1/04*

U.S. Cl. 361—422 **4 Claims**



1. A bracket assembly (20) for a wired panel (10) having at least two electrical components (18) extending therethrough, said bracket assembly (20) having a first part (22) connected to a second part (24) to form a trough (23) therebetween, said first part (22) having a back portion (26) for attaching said bracket assembly (20) to said panel (10), said electrical components (18) extending through said back portion (26) and projecting in spaced relation to said trough (23), said second part (24) having a support portion (36) with at least two open-ended keyhole slots (45) formed therein, a cable (21) disposed in said trough (23), a set of selected wires (46) from said cable (21) having connectors (50) attached at the free ends thereof, said connectors (50) being connected to a mating connector (54) on one of said electrical components (18), a grommet (52) snapped over a portion of each of said selected wires, said grommet (52) and wire (46) being seated in one of said keyhole slots (45) in close proximity to said electrical component (18), and a second set of selected wires (48) from said cable (21) having second connectors (58) attached at the ends thereof, said second connectors (58) engaging with mating connectors (60) on said electrical components (18).

4,227,240

PHOTOFLASH UNIT WITH FORMED INSULATING SHEET

John W. Shaffer, and Donald E. Armstrong, both of Williamsport, Pa., assignors to GTE Products Corporation, Stamford, Conn.

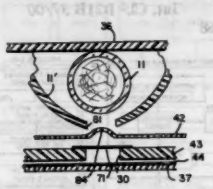
Filed Dec. 22, 1978, Ser. No. 972,197

Int. Cl.[2] G03B *15/02*

U.S. Cl. 362—13 **13 Claims**

1. A photoflash unit comprising a printed circuit board having circuitry on a surface thereof, a plurality of flashlamps positioned over said surface and having lead-in wires con-

nected to said circuitry, said circuitry being provided for sequentially igniting said flashlamps, a plurality of conductive reflectors respectively associated with said flashlamps and positioned between said lamps and said circuit board, at least one of said reflectors having an aperture therein, a radiant-energy-activated disconnect switch attached to said circuit board in alignment with said aperture in the reflector, said disconnect switch being electrically connected to said circuitry in series with a respective one of said flashlamps for interrupting the ignition circuit for said flashlamp after said



flashlamp is ignited, said disconnect switch comprising a conductive strip of heat-separable material attached at both ends to said circuit board with the midportion of said strip being spatially suspended to avoid contact with said circuit board, said strip midportion being positioned so as to be in operative relationship with the radiant output from a respective ignited flashlamp via said aperture in the reflector, a sheet of electrically insulating material interposed between said reflectors and said circuit board, and a deformation provided in said sheet of insulating material for spacing said sheet from the midportion of said strip to avoid contact therewith.

4,227,241

VISOR ASSEMBLY

Konrad H. Marcus, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

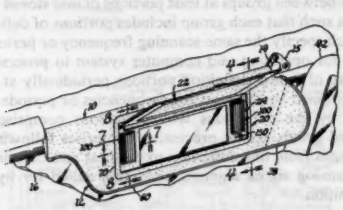
Continuation-in-part of Ser. No. 766,367, Feb. 7, 1977, which is a continuation of Ser. No. 599,333, Jul. 28, 1975, which is a division of Ser. No. 343,198, Mar. 21, 1973, Pat. No. 3,926,470.

This application Oct. 23, 1978, Ser. No. 953,590

The portion of the term of this patent subsequent to Dec. 16, 1992, has been disclaimed.

Int. Cl.[3] B60J *3/00*

U.S. Cl. 362—61 **13 Claims**



1. A visor assembly for a vehicle or the like comprising a visor having two substantially opposing elongated top and bottom edges extending along the length thereof with means for supporting the same for rotation about an axis extending along the top edge for movement from an upper storage position against the vehicle ceiling, to a generally downward vertical position, and to a position beyond the vertical; said visor having a front side facing inwardly of the vehicle when the visor is in storage position and a back side on the opposite side of said visor from the front side; a vanity mirror supported by the visor at the back side; lighting means carried by the visor at the back side immediately adjacent said mirror; a vanity mirror cover having a size and shape approximating the combined size and shape of said mirror and lighting means for covering the same; hinge means supporting said cover on the visor for pivotal movement about an axis substantially parallel to the axis of rotation of said visor and located between said mirror and lighting means and said top edge, the extent of said pivotal movement from a closed position uncovering the mirror being such as to cause said cover when in open position and when said visor is in vertical position to extend generally horizontally permitting said lighting means to direct light toward and illuminate the face of a person sitting in said vehicle opposite said visor whereby said person can view himself in said mirror; said visor, when located in the position beyond the vertical with said cover open, permitting light to shine downwardly from said lighting means to light a map or other such reading material, said cover slanting downwardly from the horizontal when said visor is in said position beyond the vertical to restrict the direct shining of light in areas above the cover; over center spring means operatively associated with said hinge means for releasably and selectively holding the cover in said closed or in said open position.

4,227,242

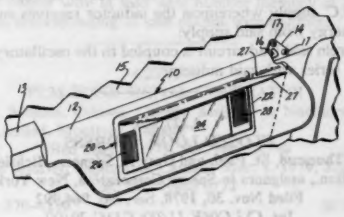
ILLUMINATED VISOR MIRROR ASSEMBLY

Konrad H. Marcus, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Mar. 19, 1979, Ser. No. 21,726

Int. Cl.[2] B60Q *1/00*

U.S. Cl. 362—61 **15 Claims**



13. A covered, illuminated mirror assembly for installation in a vehicle comprising:

a mirror frame adapted to be mounted to a vehicle for supporting a mirror therein;

a cover pivotally mounted to said mirror frame for movement between a closed position covering a mirror mounted within said frame and to one or more opened positions;

lamp means supported by said mirror frame for directing illumination outwardly therefrom; and

means coupled between said frame and cover for applying electrical power to said lamp means in an increasing amount as said cover is moved from a closed position to opened positions such that the illumination from said lamp means increases as the cover is progressively opened.

4,227,243

CONVERTERS

David Gurwicz, Gateshead, and Keith Pacey, Sale, both of England, assignors to Chloride Group Limited, London, England

Filed Jun. 22, 1978, Ser. No. 918,096

Claims priority, application United Kingdom, May 30, 1978, 26680/77

Int. Cl.[2] H02M *7/537*

U.S. Cl. 363—132 **11 Claims**

1. A DC-AC converter of push-pull form comprising:

a direct current (D.C.) input supply having terminals providing a D.C. supply voltage;

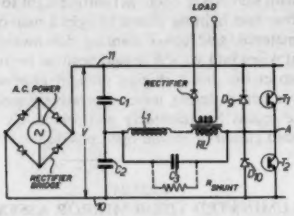
a load circuit including a transformer;

an oscillatory circuit including at least one capacitor and an inductor connected to a primary winding of the load transformer;

a solid-state switching circuit including at least one switch-

ing device connected in series with said inductor across said D.C. terminals; and

means for synchronizing the operation of the switching circuit to the oscillation of the oscillatory circuit, said synchronizing means rendering said switching circuit non-conductive to allow the oscillatory circuit to oscillate freely for part of a cycle to transfer energy from the inductor to the capacitor to charge the latter to a certain



condition in which the voltage across the inductor is substantial relative to that across one of said switching devices, which then has negligible voltage thereacross, and only then actuate said one switching device to a conductive state to connect the inductor across half of the D.C. supply whereupon the inductor receives and stores energy from said supply;

wherein said load circuit is coupled to the oscillatory circuit in series with said inductor.

4,227,244

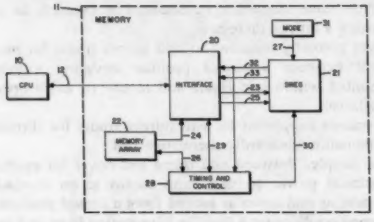
CLOSED LOOP ADDRESS

Lee T. Thorsrud, St. Paul, and Gary A. Spencer, Richfield, both of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Nov. 30, 1978, Ser. No. 964,992

Int. Cl.[2] G06F *11/00*; G11C *29/00*

U.S. Cl. 364—200 **8 Claims**



1. In a computer having a central processing unit programmable through the execution of a series of software instructions and having a memory module containing a plurality of addressable locations and containing addressing circuits which permit said central processing unit to read from or write into at least one of said plurality of addressable locations by transferring to said addressing circuits an address specifying one of said plurality of addressable locations to read from or write into, the apparatus for permitting said central processing unit to test said addressing circuits, comprising:

means responsively coupled to said central processing unit for recording that said central processing unit is testing said addressing circuits; and

means responsively coupled to said addressing circuits, said central processing unit, and said recording means for transferring to said central processing unit the address transferred to said addressing circuits when said recording means indicates that said central processing unit is testing said addressing circuits.

4,227,245

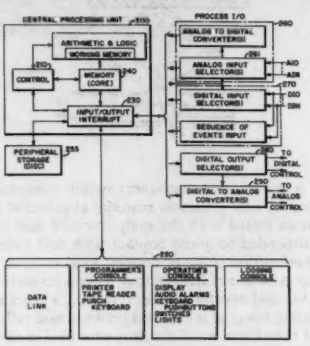
DIGITAL COMPUTER MONITORED SYSTEM OR PROCESS WHICH IS CONFIGURED WITH THE AID OF AN IMPROVED AUTOMATIC PROGRAMMING SYSTEM

Warren A. Edblad; John W. Gomola, both of Pittsburgh; Frank E. Wallace, Irwin; William G. Wood, and F. David Jones, both of Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 1, 1972, Ser. No. 258,800

Int. Cl.[2] B21B *37/00*

U.S. Cl. 364—468 **22 Claims**



1. A data gathering system for collecting data from a plurality of analog signal sources, comprising:

a digital computer system;

means for converting an analog signal into a digital value when supplied with an analog signal address, said means connecting said plurality of analog signal sources to said digital computer system;

a plurality of machine readable definitions each defining an analog signal scanning operation, and each specifying an analog signal address and a variable scanning frequency or period;

means for operating said computer system to accept and to store said definitions;

means for operating said computer system to establish linkages between groups at least portions of said stored definitions such that each group includes portions of definitions which specify the same scanning frequency or period; and

means for operating said computer system to process each group of linked definition portions periodically at a rate determined by the scanning frequencies or periods specified by the definitions whose portions comprise each linked group, where processing comprises following the linkages from one definition to the next and carrying out the analog signal scanning operation called for by each definition.

4,227,246

MULTI-PARAMETER MEASUREMENT SYSTEM FOR FLUIDS

Warren T. Vaughan, III, and Gordon MacDonnell, both of San Francisco, Calif.

Continuation of Ser. No. 796,738, May 13, 1978, abandoned. This application Nov. 6, 1978, Ser. No. 957,866

Int. Cl.[2] G06F *15/10*

U.S. Cl. 364—571 **11 Claims**

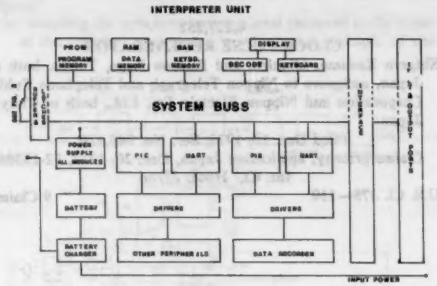
1. A self-contained, independent probe control unit for monitoring at least one parameter of a fluid, comprising:

(a) a housing immersible in the fluid;

(b) means, connected to said housing, for sensing the parameter and providing output parameter data;

(c) programmable, microcomputer control means, supported

in said housing, for processing the output data from said sensing meas; and



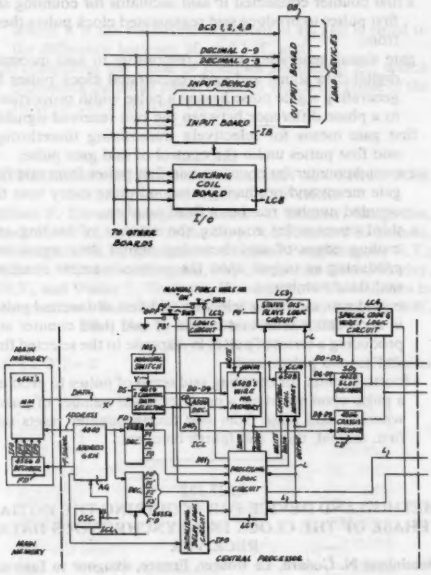
(d) means, supported in said housing, for storing the processed data.

4,227,247

INTEGRATED CIRCUIT CONTROLLER PROGRAMMABLE WITH UNIDIRECTIONAL-LOGIC INSTRUCTIONS REPRESENTATIVE OF SEQUENTIAL WIRE NODES AND CIRCUIT ELEMENTS OF A LADDER DIAGRAM

Paul M. Kintner, Bayside, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 12, 1977, Ser. No. 841,431
Int. Cl.[3] G06F 9/06; G05B 11/01
U.S. Cl. 364—900 **21 Claims**



1. In a programmable controller:

main memory means for storing sets of instructions defining the configuration of a ladder diagram, said ladder diagram having rungs comprising numbered contacts connected in series by numbered wires such that the number of an output wire from a contact is the same as the number of an input wire to the next contact, each said instruction set comprising a contact number and an output wire number from the contact;

control means for performing AND-logic functions and storing the logic value results comprising:

a first status signal storage device;

means for setting said first status signal storage device to provide a first signal indicative of the state of the input wire to a contact;

means for reading the instructions of said sets in sequence;

a second status signal storage device;

a control clock;

a control coil memory for providing second signals indicative of the states of said contacts;

means responsive to reading of said contact number instruction for AND'ing the states of said first signal from said first status signal storage device and the respective second signal from said control coil memory and setting said second status signal storage device under said clock control to a state indicative of the AND-logic function thereof;

means responsive to said second status signal storage device and to reading of said output wire number instruction for providing a status signal indicative of the setting of said second storage device which is also indicative of the state of said output wire;

an addressable wire number memory;

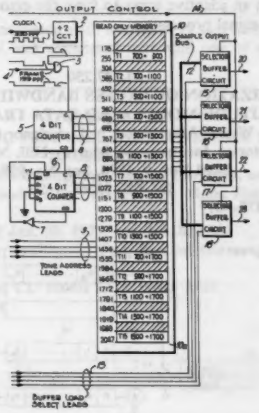
and means controlled by said clock for storing said state of said output wire in said wire number memory at an address corresponding to said output wire number.

4,227,248

PCM TONE SIGNAL GENERATOR

Ernst A. Munter, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 3, 1979, Ser. No. 26,790
Claims priority, application Canada, Mar. 1, 1979, 322547
Int. Cl.[3] H04J 3/12
U.S. Cl. 370—110 **10 Claims**



9. A method for generating a tone signal compatible with the timing of a frame and channel operating format as represented by timing signals in an associated switching facility in a communication system, the method comprising the steps of:

(a) storing digital signal samples representing the tone signals at predetermined addresses in a memory means; and

(b) generating a sequence of addresses in response to said timing signals, a plurality of said addresses being generated during the period of each frame, such that the accessed digital signal samples represent at least two different phases of the tone signal whereby different ones of a

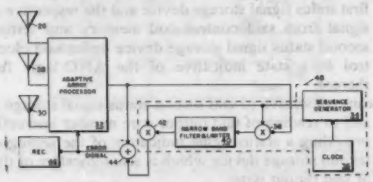
plurality of analog lines associated with a frame of said operating format may each receive a different phase of the tone being generated.

4,227,249

INJECTED CODED REFERENCE FOR ADAPTIVE ARRAY SYSTEMS

Peder M. Hansen, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 9, 1976, Ser. No. 713,006
Int. Cl.³ H04K 1/02
U.S. Cl. 375—34 **5 Claims**



1. In a communication system having adaptive signal processing the improvement comprising:

(a) first means for generating a coded reference signal filtered to match the bandpass of the system;

(b) second means for generating a signal representing information to be transmitted by said communication system;

(c) third means for combining said coded reference signal with said information signal;

(d) transmitter means for transmitting said combined signals;

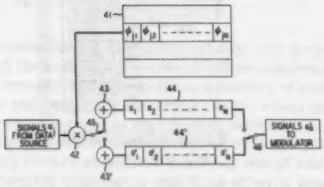
(e) a receiving system for receiving the signal transmitted by said transmitter means, said receiving system including a reference signal recovery loop for recovering said reference signal that can be combined with the output signal from an adaptive array to form the error signal for adaptive signal processing.

4,227,250

MINIMIZATION OF EXCESS BANDWIDTH IN PULSE AMPLITUDE MODULATED DATA TRANSMISSION

Aaron D. Wyner, Maplewood, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 9, 1978, Ser. No. 959,086
Int. Cl.³ H04L 3/00
U.S. Cl. 375—37 **16 Claims**



1. Method for transmitting data signals, here designated as first, comprising the steps of

(1) encoding a first block of ν of said first signals into a second block of N encoded signals, N being greater than ν, said second block being a linear combination of ν characteristic sequences, said linear combination being defined by said first data signals of said first block, and said characteristic sequences being approximations of discrete prolate spheroidal sequences or of a nonzero multiple of discrete prolate spheroidal sequences, and

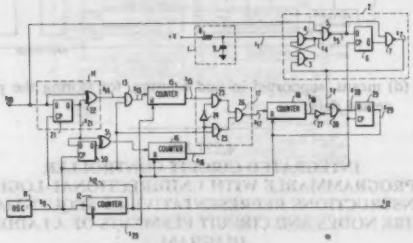
(2) modulating the amplitude of pulses by said encoded signals.

4,227,251

CLOCK PULSE REGENERATOR

Shigeru Kazama, Obihiro, and Kouzou Kage, Tokyo, both of Japan, assignors to Nippon Telegraph and Telephone Public Corporation and Nippon Electric Co., Ltd., both of Tokyo, Japan

Filed Dec. 13, 1978, Ser. No. 969,120
Claims priority, application Japan, Dec. 20, 1977, 52-153849
Int. Cl.³ H04L 25/66
U.S. Cl. 375—110 **9 Claims**



1. A clock pulse regenerator for producing regenerated clock pulses in response to an incoming digital data signal, comprising:

an oscillator for producing first pulses at a repetition rate higher than that of said incoming digital data signal;

a first counter connected to said oscillator for counting said first pulses to produce said regenerated clock pulses therefrom;

gate signal generating means responsive to said incoming digital data signal and said regenerated clock pulses for generating a gate pulse having a pulse width proportional to a phase difference between the two received signals;

first gate means for selectively transmitting therethrough said first pulses under the control of said gate pulse;

a second counter for counting said first pulses from said first gate means and producing a second pulse every time the counted number reaches a fixed number;

a third counter for counting the number of leading and trailing edges of said incoming digital data signal and producing an output upon the counted number reaching said fixed number;

a second gate means for selecting said first and second pulses in accordance with said output of said third counter and producing a series of pulses in response to the selected first and second pulses; and

a fourth counter for counting said series of pulses to produce a pulse upon counting a predetermined number of pulses whereby said pulse from said fourth counter resets said first, second, third and fourth counters.

4,227,252

METHOD AND DEVICE FOR ACQUIRING THE INITIAL PHASE OF THE CLOCK IN A SYNCHRONOUS DATA RECEIVER

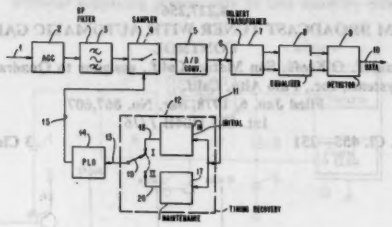
Dominique N. Godard, Le Rouret, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 2, 1979, Ser. No. 8,917
Claims priority, application France, Feb. 28, 1978, 78 06562
Int. Cl.³ H04L 7/06
U.S. Cl. 375—113 **7 Claims**

1. In a synchronous data transmission system wherein the data are transmitted by modulating a carrier wave f_c at a signaling rate $1/T$, a method of determining the initial phase value by which the phase of the receiver clock must be varied during an

initial synchronization signal whose spectrum includes two distinct lines at frequencies $f_1 = f_c - \frac{1}{2}T$ and $f_2 = f_c + \frac{1}{2}T$ is transmitted, said method being characterized in that it includes the steps of:

(a) sampling the synchronization signal received at the input of the receiver at a rate $1/\tau$ which is a multiple of the



signaling rate, to obtain a signal $x(k\tau)$ where $k=0, 1, \ldots$

(b) multiplying signal $x(k\tau)$ by itself to obtain a signal $s(k\tau)$,

(c) computing the complex coefficient C_o, which corresponds to the frequency $1/T$, of the discrete Fourier transform of signal $s(k\tau)$ from a number N of samples thereof, in accordance with the following relation:

$$C_o = \sum_{k=o}^{N-1} s(k\tau)\, e^{-j\frac{2\pi}{T}k\tau}$$

said number N being given by

$$N = 1/R\tau$$

where R is the resolution expressed in H_z and is equal to the difference between $2f_1$ and $1/T$, and

(d) computing the phase of complex coefficient C_o, which represents the initial phase value by which the phase of the receiver clock must be varied.

4,227,253

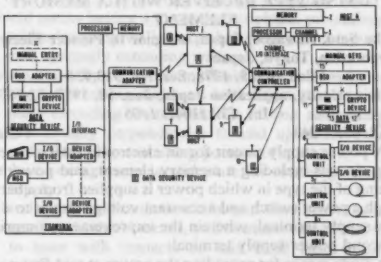
CRYPTOGRAPHIC COMMUNICATION SECURITY FOR MULTIPLE DOMAIN NETWORKS

William F. Ehrsam, Kingston; Robert C. Elander, Saugerties, both of N.Y.; Lloyd L. Hollis, Cary, N.C.; Richard E. Lennon, Woodstock, N.Y.; Stephen M. Matyas, Poughkeepsie, N.Y.; Carl H. W. Meyer, Kingston, N.Y.; Jonathan Oseas, Hurley, N.Y., and Walter L. Tuchman, Woodstock, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,531

Int. Cl.³ H04L 9/00

U.S. Cl. 375—2 **47 Claims**



6. In a multiple domain data communication network providing communication security for communication sessions between a first host system in one domain having cryptographic apparatus provided with a first master key and a second host system in another domain having cryptographic apparatus provided with a second master key where the cryptographic apparatus of each host system provides a cross domain key for cryptographic cross domain communication wit the other host system, an arrangement in said first host cryptographic apparatus for protecting the cross domain key provided by said first host system cryptographic apparatus comprising:

first host system working key storage means,

means storing a first key encrypting key of said first host system in said first host working key storage means as a working key,

means providing first input data representing said cross domain key provided by said first host system, and

cipher means operable in a first cipher function to encipher said input data under control of said working key to obtain ciphertext representing said cross domain key provided by said first host system enciphered under said first key encrypting key.

45. In a multiple domain data communication network providing communication security for data communication sessions between a host system in one domain having cryptographic apparatus provided with multiple keys and a host system in another domain having cryptographic apparatus provided with multiple keys where each host system has a logical unit associated therewith and a logical unit communication key, the method of communicating a cryptographic operational key in protected form provided by one of said host systems to the logical unit associated therewith via the other of said host systems without revealing the multiple keys of either of said host systems to the other of said host systems comprising the steps of:

providing at said one of said host systems said operational key enciphered under the logical unit communication key of the logical unit associated with said one of said host systems for communication from said one of said host systems to said other of said host systems,

communicating said enciphered operational key from said other of said host systems to the logical unit associated with said other of said host systems, and

communicating said enciphered operational key from the logical unit associated with said other of said host systems to the logical unit associated with said one of said host systems.

4,227,254

QUASI-ANALOG CHANNEL INDICATOR FOR RADIO RECEIVERS

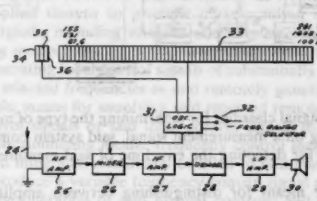
Alfred Bauer, Neu-Isenburg, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 30, 1977, Ser. No. 811,484

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1976, 2629606

Int. Cl.³ H04B 1/16; H03J 1/02

U.S. Cl. 455—154 **3 Claims**



1. In a radio receiver of the type comprising means for receiving a transmitted high-frequency signal, mixing means for receiving the high-frequency signal and also a local-oscillator-frequency signal and processing the two signals to form an intermediate-frequency signal, and means for converting the

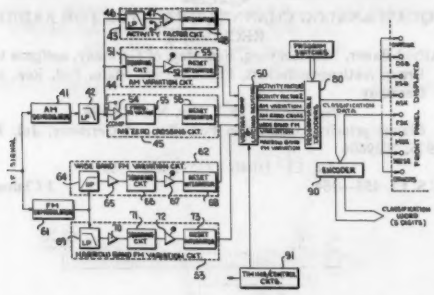
intermediate-frequency signal into an audio-frequency signal, the receiver being adapted to receive within a predetermined frequency range a series of main channels spaced apart at predetermined frequency intervals and also left and right side channels, each left side channel being spaced by a predetermined frequency interval below a respective one of the main channels, each right side channel being spaced by a predetermined frequency interval above a respective one of the main channels, in combination therewith, multi-channel oscillator means operative for furnishing the local-oscillator-frequency signals to the mixing means; and quasi-analog digital channel display means operative for indicating which channel has been tuned in using a display technique visually simulating the display performed by mechanical channel display means of the calibrated-scale-with-shifting-pointer type, the quasi-analog digital channel display means including a plurality of indicator elements arranged in a row to form a quasi-analog channel-indicating scale the successive individual indicator elements of which are each respectively associated with a respective successive one of the channel frequencies in the band of broadcast channel frequencies receivable by the radio receiver in the same sequence as the channel frequencies are located within the receivable band of broadcast channel frequencies, and indicator control means controlled by the multi-channel oscillator means and in turn controlling the operation of the indicator elements, and the display means further including two auxiliary indicator elements respectively operative for indicating that a right side channel or a left side channel has been tuned in, the indicator control means comprising means operative in dependence upon the multi-channel oscillator means for causing the indicator element of said row associated with a tuned-in channel to be operative and for causing one or the other of the auxiliary indicator elements to become operative in dependence upon whether the multi-channel oscillator means has effected the tuning-in of a left side channel or a right side channel.

4,227,255

SIGNAL CLASSIFIER

Robert L. Carrick, Vienna; William T. Manning, Centreville, and Robert E. Grimes, Leesburg, all of Va., assignors to Telcom, Inc., Vienna, Va.

Filed Apr. 11, 1979, Ser. No. 29,059
Int. Cl.[2] H04B *17/00*
U.S. Cl. 455—226 **27 Claims**



10. A signal classifier for determining the type of modulation appearing on a measurement signal, said system comprising:

means for detecting the envelope of said measurement signal;

further means for distinguishing between amplitude shift keying modulation and suppressed carrier single sideband voice amplitude modulation, said further means comprising:

means for measuring the frequency of zero level crossings in said detected amplitude modulation;

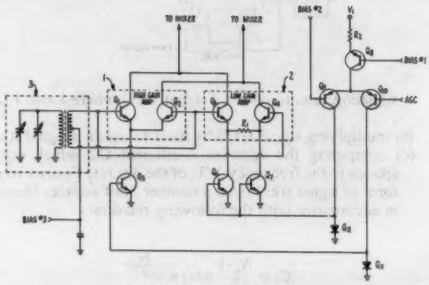
logic means for determining that said type of modulation is amplitude shift keying when the frequency of said zero level crossings is very low and for determining that said type of modulation is suppressed carrier single sideband voice amplitude modulation when said zero level crossing frequency is relatively high.

4,227,256

AM BROADCAST TUNER WITH AUTOMATIC GAIN CONTROL

Gerald T. O'Keefe, San Mateo, Calif., assignor to Quadracast Systems, Inc., Palo Alto, Calif.

Filed Jan. 6, 1978, Ser. No. 867,607
Int. Cl.[2] H04B *1/16*
U.S. Cl. 455—251 **3 Claims**



1. A R.F. amplifier stage, said amplifier including an output line to a mixer and an input line from a source of AGC voltage, comprising in combination:

a. an antenna circuit,

b. a high-gain RF amplifier;

c. a low-gain RF amplifier;

d. means for introducing the output of the antenna circuit in parallel direct to both the high-gain and low-gain amplifiers;

e. fixed bias means normally biasing said high-gain amplifier on and said low-gain amplifier off;

f. said source of AGC voltage generating a DC voltage proportional to the signal power level in said antenna circuit;

g. means for applying said DC voltage as an automatic gain control voltage to switching circuitry controlling said high-gain amplifier and said low-gain amplifier whereby said high-gain amplifier is gradually turned off and said low-gain amplifier is gradually turned on as said DC voltage increases.

4,227,257

POWER SUPPLY CIRCUIT FOR AN ELECTRONIC TUNING TYPE RECEIVER WITH A MEMORY ELEMENT

Reisuke Sato, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 8, 1978, Ser. No. 913,926
Claims priority, application Japan, Jun. 10, 1977, 52-75744
Int. Cl.[3] H04B *1/06*
U.S. Cl. 455—343 **4 Claims**

1. A power supply circuit for an electronic tuning receiver having circuits including a memory element, said power supply being of the type in which power is supplied from a battery through a power switch and a constant voltage circuit to a first power supply terminal, wherein the improvement comprises:

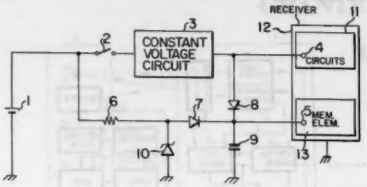
a second power supply terminal;

first diode means for providing the power at said first power supply terminal to said second power supply terminal and for preventing the flow of power from said second to said first power supply terminals;

second diode means for providing power directly from said

battery to said second power supply terminal and for preventing the flow of power in the reverse direction; and

a capacitor connected between said second power supply terminal and ground, said first power supply terminal supplying power to said circuits of said receiver except said memory element, and said second power supply terminal supplying power only to said memory element,



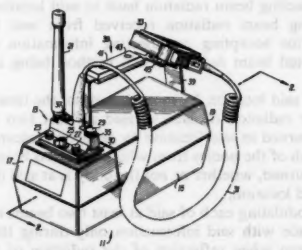
so that: when said power switch is on, power is supplied from said first terminal to said memory element through said first diode means; when said power switch is off, power is supplied to said memory element through said second diode means; and when said battery is disconnected, power is supplied to said memory element from said capacitor.

4,227,258

HOUSING FOR A HAND HELD TRANSMITTER-RECEIVER

James A. Root, Orlando, and Arleigh B. Baker, Longwood, both of Fla., assignors to SCOPE Incorporated, Reston, Va.

Filed Jan. 18, 1979, Ser. No. 4,493
Int. Cl.[2] H04B 1/08
U.S. Cl. 455—348 **5 Claims**



1. A housing for a hand held transmitter-receiver and associated power supply comprising

a base having a peripheral upwardly extending wall;

shield means having a top and a peripheral subtending wall, said subtending wall removably mating with a portion of said upwardly extending wall;

an aperture through said top of said shield means for accepting and retaining said hand held transmitter-receiver;

a plate extending from a section of said subtending wall substantially perpendicular to said upwardly extending wall within the remaining portion of said wall;

at least one aperture in said plate for retaining said power supply;

plural electrical contacts within said base below said aperture in said shield means, said contacts being located so as to mate with contacts on said hand held transmitter-receiver;

circuit means within said base for connecting said contacts to said power supply;

a cover having a top, subtending side walls and one subtending end wall, said subtending side walls and end wall mating with the remaining portion of said upwardly extending wall; and

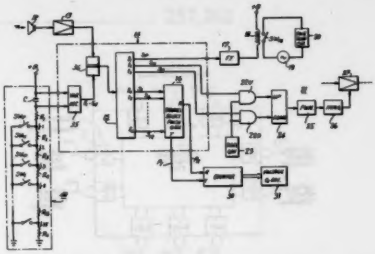
means for removably securing said base, said shield, said plate and said cover together.

4,227,259

CIRCUIT FOR USE IN REMOTE CONTROL OF A SIGNAL RECEIVER

Takao Mogi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 17, 1979, Ser. No. 30,820
Claims priority, application Japan, Apr. 19, 1978, 53-46242
Int. Cl.[2] H04B 1/16
U.S. Cl. 455—352 **15 Claims**



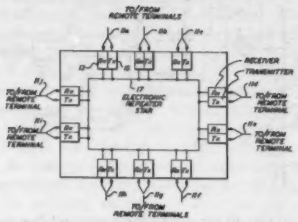
1. A control circuit for controlling selected functions, comprising an integrated circuit having a first input for receiving control signals of different selected frequencies; frequency discriminating means included in said integrated circuit for detecting the frequency of a signal applied thereto to produce corresponding function signals; variable oscillating means included in said integrated circuit for selectively generating signals of substantially the same different selected frequencies as said received control signals; means for supplying said received control signals or said generated signals to said frequency discriminating means; variable time constant means external of said integrated circit and operative to exhibit different selected time constants; and a second input provided in said integrated circuit for connecting said variable time constant means to said variable oscillating means, whereby the frequency of the signal generated by said variable oscillating means is determined by the time constant of said variable time constant means connected thereto.

7. A control circuit for use in a signal receiver, such as a television receiver, for controlling particular operations of said signal receiver, including channel selection, in response either to remotely generated control signals of different selected frequencies or to manual controls provided with said signal receiver, said control circuit comprising an integrated circuit having a first input terminal for receiving said remotely generated control signals; frequency discriminating means included in said integrated circuit for discriminating the frequency of a signal applied thereto to produce corresponding operating control signals, including channel selecting signals; variable oscillating means included in said integrated circuit for selectively generating local control signals of substantially the same different selected frequencies as said remotely generated control signals; means for supplying said received remoted generated control signals or said local control signals to said frequency discriminating means; frequency control means external of said integrated circuit and coupled to said manual controls to produce a variable frequency-control signal as a function of the operation of said manual controls; and a second input provided in said integrated circuit for connecting said frequency control means to said variable oscillating means, whereby the frequency of the local control signal generated by said variable oscillating means is determined by the frequency-control signals produced by said frequency control means connected thereto.

4,227,260
ELECTRONIC ACTIVE STAR ELEMENT FOR AN OPTICAL DATA TRANSMISSION SYSTEM

Mario M. Vojvodich, Morris Plains, N.J., and Charles E. Theall, Jr., Weston, Conn., assignors to The Singer Company, Little Falls, N.J.

Filed Nov. 6, 1978, Ser. No. 958,281
Int. Cl.[3] H04B 9/00; G02B 5/14
U.S. Cl. 455—601 14 Claims



1. An electronically active star element for interconnecting remote terminals in a multi-terminal fiber optic data communication system in which a plurality of remote terminals are coupled to each other over an optical transmission data bus, each terminal having the capability to transmit to every other terminal and to receive from every other terminal over an optical cable which forms the data bus, each remote terminal thus having associated therewith an optical cable which must be interconnected with the optical cable from each other data terminal, comprising:

(a) first means to convert the optical signals on all of the optical cables into amplified electrical signals comprising at least first and second receivers and means for coupling the signal from each of said cables to both of said receivers;

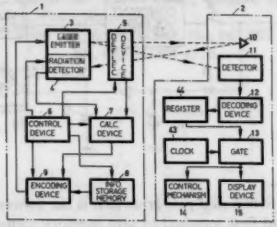
(b) second means to convert said amplified electrical signals back into an optical signal; and

(c) third means to couple said optical signal to each of said optical cables.

4,227,261
TRANSMISSION OF INFORMATION BY SWEEPING FAN-SHAPED BEAMS

Hans R. Robertsson, Jönköping, Sweden, assignor to Saab-Scania AB, Linköping, Sweden

Filed Feb. 22, 1979, Ser. No. 14,116
Claims priority, application Sweden, Mar. 2, 1978, 7802349
Int. Cl.[3] G01B 11/26; H04B 9/00; F41F 22/00; F41G 3/26
U.S. Cl. 455—600 7 Claims



1. A method whereby information that is transmitted from a location at the apex of a solid angle space in which a plurality of bodies may be present can be delivered exclusively to one of said bodies, selected on the basis of a criterion comprising a requirement that said body is at a distance from said location such that said information is appropriate for said body, said information being transmitted by modulation of at least two fan-shaped beams of radiation that are emitted from said location, each beam being long and narrow in cross-section and being swept angularly across said space substantially transversely to its long cross-section dimension, the several beams having their respective long cross-section dimensions differently oriented and being swept in a sweep cycle of a predetermined duration during which every beam makes at least one sweep across said space, and each of said bodies having means for reflecting beam radiation back to said location, means for detecting beam radiation received from said location and means for accepting or rejecting information contained in modulated beam radiation, said method being characterized by:

A. at said location, by measurement of the time required for the radiation of each of said at least two beams to be returned to said location by reflection, ascertaining, as to each of the bodies from which reflected beam radiation is returned, whether or not the body is at said distance from said location;

B. modulating each of said at least two beams in correspondence with said information only during the time in its sweep when reflection of the radiation of that beam is received at said location and ascertained to have been returned from a body at said distance from said location; and

C. at each body, accepting said information only when radiation modulated in correspondence with said information is detected from each of said at least two beams within a predetermined time interval which is at least as long as said sweep cycle duration.

DESIGN PATENTS

GRANTED OCT. 7, 1980

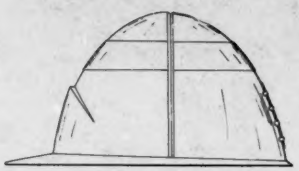
ERRATA

For CLASS	See PATENT NO.
D15–127	257,262

DESIGNS

OCTOBER 7, 1980

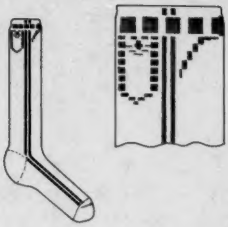
257,184
FOOTBALL CAP
Engelbert J. Peham, St. Paul, Minn., assignor to Peham Plastics, Inc., St. Paul, Minn.
Filed Sep. 30, 1977, Ser. No. 838,257
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—248



257,185
SHOE
Joseph P. Famolare, Jr., 4 W. 58th St., New York, N.Y. 10019
Filed Feb. 13, 1978, Ser. No. 877,359
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309

257,186
SHOE SOLE
Joseph P. Famolare, Jr., Florence, Italy, assignor to Famolare, Inc., New York, N.Y.
Filed Sep. 19, 1977, Ser. No. 834,385
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322

257,187
SOCK
Jerry R. Phillips, Hickory, N.C., assignor to Phillips Hosiery Mill, Inc., Hickory, N.C.
Filed Jul. 21, 1977, Ser. No. 817,610
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—329



257,188
BOOT JACK
Andrew Blicha, 11535 Kelowna St., Lake View Terrace, Calif. 91342
Filed Oct. 11, 1978, Ser. No. 950,478
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—378.2

257,189

COMBINED GOLF TEE AND BALL MARKER HOLDER

Robert A. Winbauer, 301 NW. 35 Ct., Apt. 10, Pompano Beach, Fla. 33064

Filed Mar. 17, 1978, Ser. No. 887,644

Term of patent 14 years

Int. Cl. D02—*99*

U.S. Cl. D2—400

257,190

STORAGE CASE FOR RECORDING CASSETTE

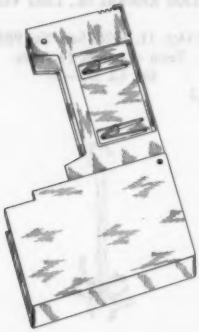
Patrick Posso, Lausanne, Switzerland, assignor to Gefitec S.A., Lausanne, Switzerland

Filed Feb. 15, 1979, Ser. No. 12,512

Term of patent 14 years

Int. Cl. D3—*02*

U.S. Cl. D3—35



257,191

MOLDED PLASTIC CONTAINER

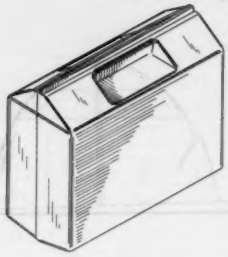
Donald G. Wilcox, P.O. Box 4030 Lunar Dr., Woodbridge, Conn. 06525, assignor to Donald G. Wilcox, Seymour, Conn. and Show-Pak Inc., Woodbridge, Conn.

Filed Dec. 15, 1978, Ser. No. 969,954

Term of patent 14 years

Int. Cl. D3—*01*

U.S. Cl. D3—73



257,192

TOOTHBRUSH HANDLE

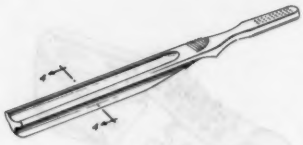
Horace C. Moses, Needham, Mass., assignor to The Kendall Company, Boston, Mass.

Filed Oct. 5, 1978, Ser. No. 948,929

Term of patent 14 years

Int. Cl. D4—*02*

U.S. Cl. D4—25



257,193

RACKET HOLDER

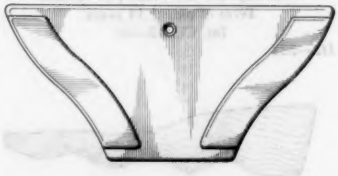
Peter E. Glage, Frankfurter Strasse 9, 624 Königstein, Fed. Rep. of Germany

Filed Jun. 19, 1979, Ser. No. 50,270

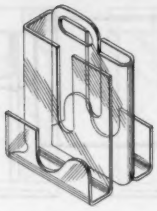
Term of patent 14 years

Int. Cl. D6—*04*

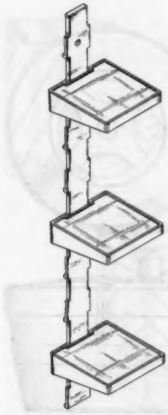
U.S. Cl. D6—125



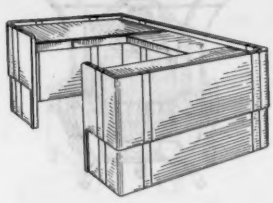
257,194
HOLDER FOR FOOD PROCESSOR ACCESSORIES
Fredrik G. R. von Roth, II, Peru, Vt., assignor to Acrylic Designs, Inc.
Filed Feb. 8, 1978, Ser. No. 876,185
Term of patent 14 years
Int. Cl. D6—*04*; D7—*06*
U.S. Cl. D6—130



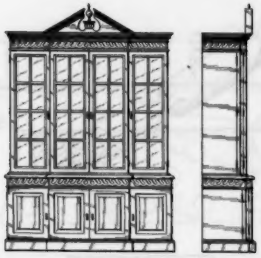
257,195
SHELVING UNIT OR THE LIKE
James B. Swett, Altamonte Springs, Fla., and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Aug. 11, 1978, Ser. No. 933,006
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—134



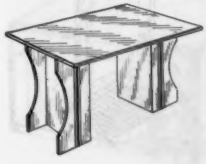
257,196
DESK OR SIMILAR ARTICLE
Lawrence Lerner, New York, N.Y., and Fred Schmitt, Nutley, N.J., assignors to Litton Business Systems, Inc.
Division of Ser. No. 770,328, Feb. 22, 1977. This application Jun. 21, 1979, Ser. No. 50,883
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161



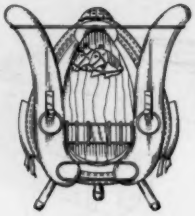
257,197
BREAKFRONT OR SIMILAR ARTICLE
Manuel P. Sanchez, Polig. Calonge, Parcela 12 - Nave 2., Seville, Spain
Filed Jul. 31, 1978, Ser. No. 929,677
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—172



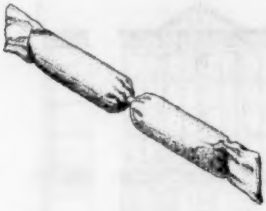
257,198
TABLE HAVING PIVOTAL PANELS
R. Cornelius Peters, 1016 Hollywood, Chicago, Ill. 60660, assignor to Robert C. Peters
Filed Apr. 3, 1978, Ser. No. 893,133
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



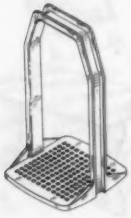
257,199
MAGAZINE RACK
Kendall E. Hoke, P.O. Box 272, Sidney, N.Y. 13838
Filed Oct. 25, 1978, Ser. No. 954,422
Term of patent 7 years
Int. Cl. D6—*04*
U.S. Cl. D6—184



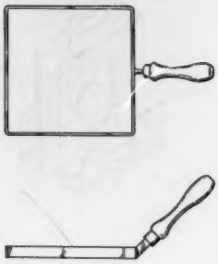
257,200
TRAVELLING PILLOW
Elena T. LaRocca, 7D Oliva Dr., Novato, Calif. 94947, assignor to Lyla F. Parrish; Vincent R. LaRocca; Patricia E. LaRocca and Elena T. LaRocca, Novato, Calif.
Filed Oct. 23, 1978, Ser. No. 953,490
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201



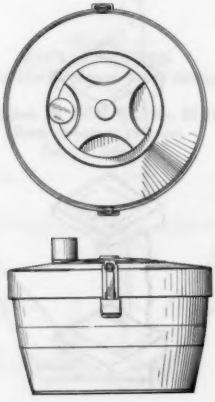
257,201
TRAY OR THE LIKE
Jack V. Croyle, North Providence, and Robert F. Bateman, Greenville, both of R.I., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Aug. 11, 1978, Ser. No. 933,001
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—19



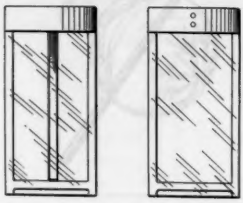
257,202
EGG COOKING FRAME
Ronald G. Schessl, RTA Campground, 12115 NW. Expressway, Oklahoma City, Okla. 73131
Filed May 16, 1977, Ser. No. 797,042
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—43



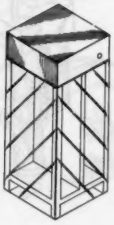
257,203
VEGETABLE DRYING IMPLEMENT
John S. Doyel, 404 W. 20th St., New York, N.Y. 10011
Filed Oct. 10, 1978, Ser. No. 949,534
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—47



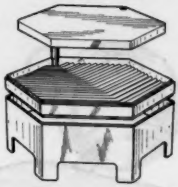
257,204
CONDIMENT SHAKER
William E. Bounds, 23790 Hawthorne Blvd., Torrance, Calif. 90505
Filed Jun. 5, 1978, Ser. No. 912,938
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—57



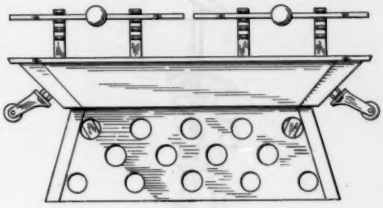
257,205
CONDIMENT DISPENSER
William E. Bounds, 23790 Hawthorne Blvd., Torrance, Calif. 90505
Filed Jun. 16, 1978, Ser. No. 916,236
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—57



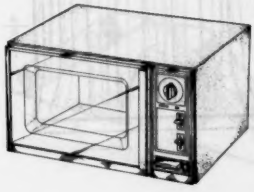
257,206
TABLE GRILL
Michel Vincent, c/o Arreso Form ApS, 5 Havnevej, DK-3300 Frederiksvaerk, Denmark
Filed Mar. 8, 1978, Ser. No. 884,716
Claims priority, application Denmark, Sep. 12, 1977, 700/77
Term of patent 14 years
Int. Cl. D7—*02*; D6—*03*
U.S. Cl. D7—107



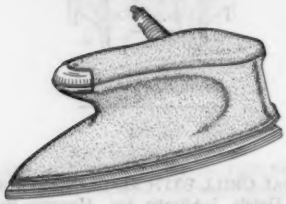
257,207
CHARCOAL GRILL WITH KINDLING STRUCTURE
Reynold D. Tisdale, 2 Atlantic Ave., Hampton Beach, N.H. 03842
Filed Apr. 13, 1978, Ser. No. 896,160
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—110



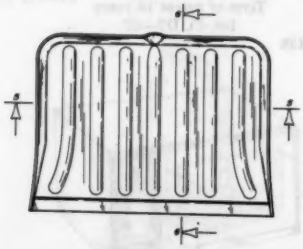
257,208
MICROWAVE OVEN
Masamichi Yamamura, Osaka; Toshio Harada, Nara, and Hanji Takahashi, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Aug. 16, 1978, Ser. No. 934,331
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



257,209
STEAM IRON
Erich R. Baumgartner; Peter Doehler, both of Munich; Dieter Rams, Kronberg, and Jürgen Greubel, Heidenrod, all of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany
Filed Feb. 27, 1978, Ser. No. 881,877
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 738649
Term of patent 7 years
Int. Cl. D7—*05*
U.S. Cl. D7—203

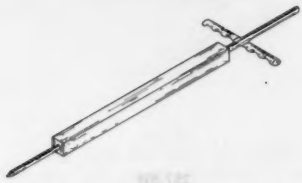


257,210
SNOW SHOVEL SCOOP
David R. Bonnes, Columbus, Ohio, assignor to The Union Fork & Hoe Company, Columbus, Ohio
Filed May 8, 1978, Ser. No. 903,986
Term of patent 14 years
Int. Cl. D08—*01*
U.S. Cl. D8—10



257,211
TOOL FOR MOUNTING MARKING SLEEVES ONTO WIRES, CABLES, OR THE LIKE
Torbjörn Lööf, and Lars Skarin, both of Otterbäcken, Sweden, assignors to Partex Fabriksaktiebolag, Gullspang, Sweden
Filed Aug. 8, 1977, Ser. No. 822,759
Claims priority, application Sweden, Feb. 10, 1977, 77324
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14

257,212
EARTH PIERCING TOOL FOR SIGN INSTALLATION
Gary D. Parker, 16500 W. Center Rd., Omaha, Nebr. 68130
Filed Sep. 18, 1978, Ser. No. 944,032
Term of patent 7 years
Int. Cl. D8—*01*
U.S. Cl. D8—14



257,213
BATTERY POWERED GREASE GUN
Jerome B. Wegmann, St. Louis County, and Norbert F. Cook, Florissant, both of Mo., assignors to McNeil Corporation, Akron, Ohio
Filed Nov. 13, 1978, Ser. No. 959,513
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14.1

257,214
DRAWER KNOB OR THE LIKE
Joseph W. Withers, Los Angeles, Calif., and Gustav Elstner, Kaufbeuren, Fed. Rep. of Germany, assignors to Belwith International Ltd., Pico Rivera, Calif.
Continuation of Ser. No. 878,274, Feb. 16, 1978, abandoned.
This application Jan. 9, 1979, Ser. No. 2,007
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—310

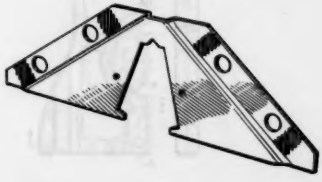
257,215
DRAWER KNOB OR THE LIKE
Joseph W. Withers, Los Angeles, Calif., and Gustav Elstner, Kaufbeuren, Fed. Rep. of Germany, assignors to Belwith International Ltd., Pico Rivera, Calif.
Continuation of Ser. No. 878,276, Feb. 16, 1978, abandoned.
This application Jan. 15, 1979, Ser. No. 3,463
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—310

257,216
DRAWER KNOB OR THE LIKE
Joseph W. Withers, Los Angeles, Calif., and Gustav Elstner, Kaufbeuren, Fed. Rep. of Germany, assignors to Belwith International Ltd., Pico Rivera, Calif.
Continuation of Ser. No. 878,273, Feb. 16, 1978, abandoned.
This application Jan. 15, 1979, Ser. No. 3,464
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—310

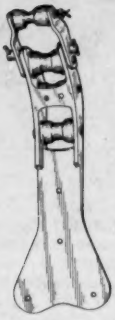
257,217
DRAWER KNOB OR THE LIKE
Joseph W. Withers, Los Angeles, Calif., and Gustav Elstner, Kaufbeuren, Fed. Rep. of Germany, assignors to Belwith International Ltd., Pico Rivera, Calif.
Continuation of Ser. No. 878,275, Feb. 16, 1978, abandoned.
This application Jan. 15, 1979, Ser. No. 3,484
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—310

257,218
TOGGLE JOINT FASTENER
Lars Eriksson, Djurgardsvägen 15, S-633 40 Eskilstuna, Sweden
Filed Dec. 20, 1977, Ser. No. 863,344
Claims priority, application Sweden, Nov. 8, 1977, 772277
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—336

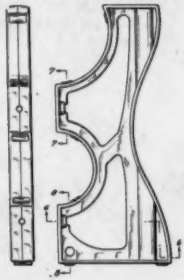
257,219
PICTURE-HANGING BRACKET
Robert D. Cook, 4475 Vieja Dr., Santa Barbara, Calif. 93110
Filed Sep. 25, 1978, Ser. No. 945,181
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—354



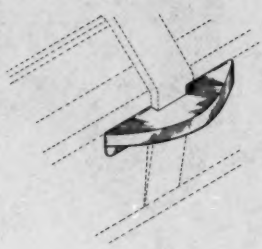
257,220
ANCHOR CONTROL DEVICE
Roy J. Dennis, 521 Henley Beach Rd., Fulham, South Australia, Australia
Filed Oct. 13, 1977, Ser. No. 841,957
Claims priority, application Australia, Sep. 19, 1977, 72844/77
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—356



257,221
SUPPORT BRACKET SECTION FOR CYLINDRICAL ELEMENTS
Barry J. Piesner, Brooklyn, N.Y., assignor to Homeland Industries Inc., Bohemia, N.N.Y.
Filed Oct. 16, 1978, Ser. No. 951,868
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—380



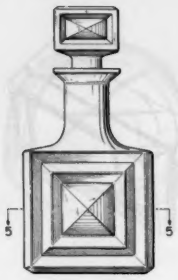
257,222
MOULDING PROTECTOR
James M. Woodard, 5470 Glore Dr., Mableton, Ga. 30059
Filed Aug. 14, 1978, Ser. No. 933,732
Term of patent 14 years
Int. Cl. D6—*06*; D8—*09*
U.S. Cl. D8—402



257,223
DECANTER
Eric Lee, Elmhurst, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Filed Sep. 21, 1978, Ser. No. 944,473
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—23

257,224
DECANTER
Eric Lee, Elmhurst, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Filed Sep. 21, 1978, Ser. No. 944,475
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—26

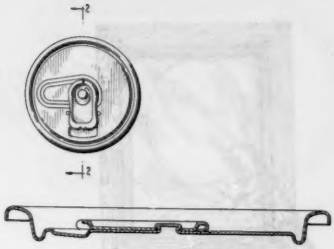
257,225
COMBINED DECANTER AND STOPPER
Edward J. Kretz, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed May 1, 1978, Ser. No. 902,021
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—159



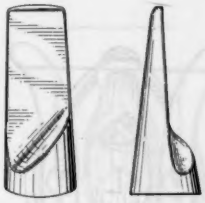
257,226
DISPLAY CONTAINER
Alvan C. Kimball, 672 Baker, Wadsworth, Ohio 44281
Filed Jan. 13, 1978, Ser. No. 869,120
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—191

257,227
COMPARTMENTED PACKAGE OF TENNIS BALLS
Phillip W. Youngberg, 22 Egret St., New Orleans, La. 70124
Filed Mar. 18, 1977, Ser. No. 779,246
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—193

257,228
END CLOSURE FOR A CONTAINER
William T. Saunders, Weirton, W. Va., assignor to National Steel Corporation, Pittsburgh, Pa.
Filed Jan. 18, 1979, Ser. No. 4,586
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—255

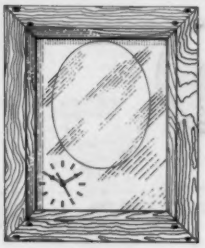


257,229
BOTTLE CAP
Jean Leger, 27 rue de Seine, Paris, France (75006)
Filed Mar. 29, 1978, Ser. No. 891,482
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—283

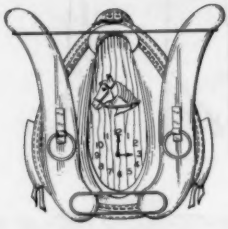


257,230
STOPPER
James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed Mar. 21, 1979, Ser. No. 22,585
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D9—285

257,231
COMBINED CLOCK AND PICTURE FRAME OR THE LIKE
Kathleen C. Boyland, and Larry D. Edmonds, both of 28800 Worth Dr., Porterville, Calif. 93257
Filed Oct. 30, 1978, Ser. No. 956,218
Term of patent 7 years
Int. Cl. D10—*01*
U.S. Cl. D10—2

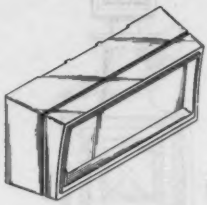


257,232
WALL CLOCK
Kendall E. Hoke, P.O. Box 272, Sidney, N.Y. 13838
Filed Jul. 13, 1978, Ser. No. 924,851
Term of patent 7 years
Int. Cl. D10—*01*
U.S. Cl. D10—6

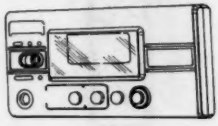


257,233
CLOCK OR LIKE ARTICLE
Robert G. Turner, 1723 Stevens St., Indianapolis, Ind. 46227
Filed Dec. 26, 1978, Ser. No. 973,376
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—6

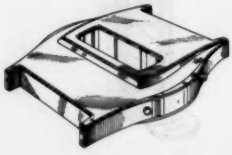
257,234
DIGITAL CLOCK
Dana L. Vickery, Gardner, Mass., assignor to Simplex Time Recorder Co., Gardner, Mass.
Filed Aug. 2, 1978, Ser. No. 930,431
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



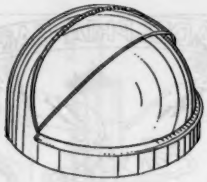
257,235
TRAVEL ALARM CLOCK
Michael Cheung, Shaukeiwan, Hong Kong, assignor to Promotors Limited, Kowloon, Hong Kong
Filed Sep. 20, 1978, Ser. No. 944,159
Claims priority, application United Kingdom, May 9, 1978, 984516/78
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



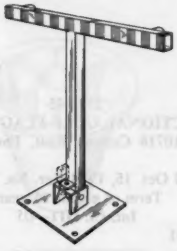
257,236
WATCH CASE
Cabanne H. Link, 727 Pleasant Valley La., Richardson, Tex. 75080
Filed Aug. 10, 1978, Ser. No. 932,528
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—30



257,237
COMPASS HOOD
William Macowski, Caldwell, N.J., assignor to Aqua Meter Instrument Corp., Roseland, N.J.
Filed Sep. 26, 1978, Ser. No. 945,848
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—68

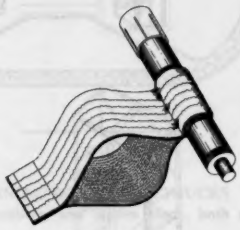


257,238
PARKING SPACE RESERVER
Samuel I. Landsman, 3213 Bonnie Rd., Baltimore, Md. 21208
Filed Dec. 10, 1979, Ser. No. 101,623
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—109



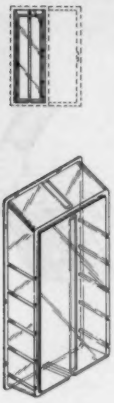
257,239
ELECTRICAL TEST PROBE
Philmore E. Johnson, Bristol, Conn., assignor to The Superior Electric Company, Bristol, Conn.
Filed May 10, 1978, Ser. No. 904,723
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—103

257,240
SAFETY LIGHT FOR JOGGERS
Fred J. Leary, Natick, Mass., assignor to Professional Exchange Systems, Inc.
Filed Mar. 21, 1979, Ser. No. 22,530
Term of patent 14 years
Int. Cl. D10—*06*; D26—*02*
U.S. Cl. D10—114

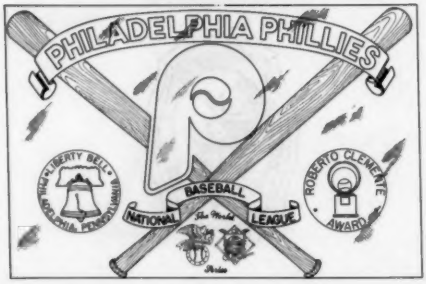


257,241
MUSHROOM WALL ORNAMENT
Donald R. Ditto, Rte. #2, Box #60F2, Winnsboro, Tex. 75494
Filed Aug. 9, 1978, Ser. No. 932,420
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—139

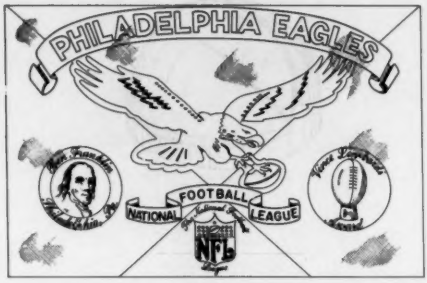
257,242
DOOR WALL GREENHOUSE
Donald R. Hunter, 20490 Olympia, Detroit, Mich. 48240
Filed Sep. 21, 1977, Ser. No. 835,408
Term of patent 14 years
Int. Cl. D11—*99*
U.S. Cl. D11—145



257,243
ATHLETIC TEAM FLAG
Norbert V. Filliben, 506 S. Elmwood Ave., Glenolden, Pa. 19036
Filed Nov. 24, 1978, Ser. No. 963,585
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—172

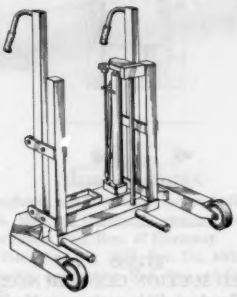


257,244
ATHLETIC TEAM FLAG
Norbert V. Filliben, 506 S. Elmwood Ave., Glenolden, Pa. 19036
Filed Nov. 24, 1978, Ser. No. 963,586
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—172

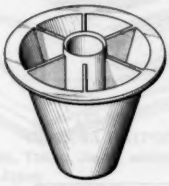


257,245
SECTIONAL GOLF FLAG POLE
Keith A. Neal, 10718 Camino Real, Fountain Valley, Calif. 92708
Filed Oct. 16, 1978, Ser. No. 952,004
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—181

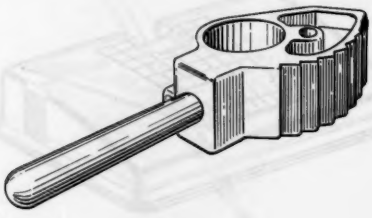
257,246
HAND TRUCK FOR LIFTING AND TRANSPORTING A TIRE WHEEL
Yukiyoshi Hihara, Fujinomiya, Japan, assignor to Yasui Sangyo Co., Ltd., Fujinomiya, Japan
Filed Aug. 31, 1978, Ser. No. 938,979
Claims priority, application Japan, Jul. 14, 1978, 53-29760
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—56



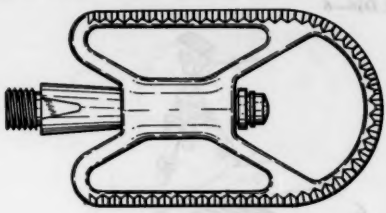
257,247
PALLET POST
Richard J. Powers, 4340 N. Marmora, Chicago, Ill. 60639
Filed Jul. 30, 1979, Ser. No. 61,815
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D12—60



257,248
CAM STOPPER
Carl A. Merry, Marion, Mass., assignor to Schaefer Marine, Inc., New Bedford, Mass.
Filed Jan. 6, 1978, Ser. No. 867,454
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—70

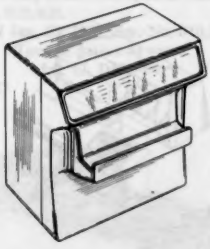


257,249
BICYCLE PEDAL
Robert M. Kingsbury, Jackson, Mich., assignor to Kingsbury Products Incorporated, Jackson, Mich.
Filed Jan. 2, 1979, Ser. No. 298
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—125

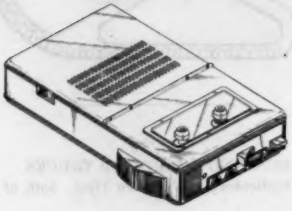


257,250
RUNNING BOARD FOR TRUCKS
Bernard R. Stoltenberg, and Steven Heck, both of Luverne, Minn.,
assignors to Luverne Truck Equipment, Inc., Luverne, Minn.
Filed May 1, 1978, Ser. No. 901,726
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—203

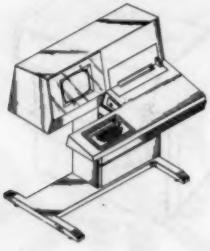
257,251
INDUCTION CHARGER
Paul O. Rawson, Easton, and Louis E. Nagy, Killingworth, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Nov. 28, 1977, Ser. No. 855,447
Term of patent 14 years
Int. Cl. D13—*02*; D10—*04*
U.S. Cl. D13—05



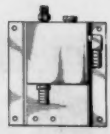
257,252
TAPE RECORDER
Yasuo Hattori, Hachio, Japan, and David Walz, Atlanta, Ga., assignors to Olympus Optical Co., Ltd., Tokyo, Japan and Lanier Business Products, Inc., Atlanta, Ga.
Filed Jun. 28, 1978, Ser. No. 919,810
Claims priority, application Japan, Mar. 2, 1978, 53-7917
Term of patent years
Int. Cl. D14—*01*
U.S. Cl. D14—6



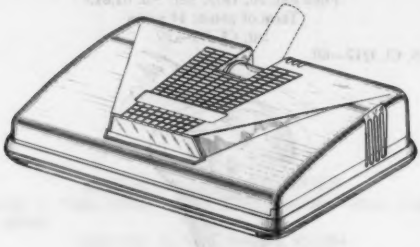
257,253
TERMINAL
Gregory F. Fossella; John B. MacDonald, both of Boston, and Michael J. Mercadante, North Quincy, all of Mass., assignors to Simplex Time Recorder Co., Gardner, Mass.
Filed Nov. 17, 1978, Ser. No. 961,805
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—44



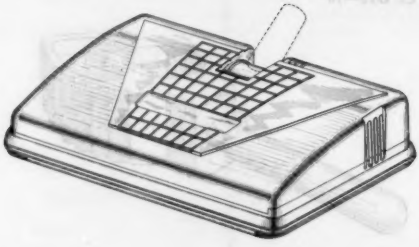
257,254
FOAM GENERATOR FOR A CLEANING MACHINE
Thomas G. Lafferty, 916 Oak Grove Rd., North Little Rock, Ark. 72118
Filed May 19, 1978, Ser. No. 907,784
Term of patent 14 years
Int. Cl. D15—*04*; D23—*01*
U.S. Cl. D15—56



257,255
POWERED SUCTION CLEANER NOZZLE
Nora Robinson, Cleveland, Ohio, assignor to Health-Mor, Inc., Chicago, Ill.
Filed May 22, 1978, Ser. No. 908,586
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—64

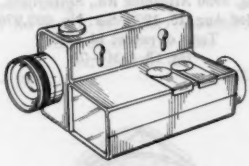


257,256
POWERED SUCTION CLEANER NOZZLE
Nora Robinson, Cleveland, Ohio, assignor to Health-Mor, Inc., Chicago, Ill.
Filed May 22, 1978, Ser. No. 908,587
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—64



257,257
HOLDER FOR WEAVING MATERIAL
John W. McArthur, Nine Cottage St., Basking Ridge, N.J. 07920
Filed Jun. 6, 1978, Ser. No. 912,990
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—66

257,258
MOVIE CAMERA
Norbert Schlagheck, and Herbert Schultes, both of Fuerstenfeldbruck, Fed. Rep. of Germany, assignors to GFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany
Filed Apr. 12, 1978, Ser. No. 895,659
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 5526149
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—04



257,259
CAMERA UNIPOD
Yukinobu Shiraishi, Tokyo, Japan, assignor to Slik Tripod Co., Ltd., Saitama, Japan
Filed Jun. 27, 1978, Ser. No. 919,615
Claims priority, application Japan, Mar. 10, 1978, 53-8712
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—44

257,260
CAMERA TRIPOD
Yukinobu Shiraishi, Tokyo, Japan, assignor to Slik Tripod Co., Ltd., Saitama, Japan
Filed Apr. 24, 1978, Ser. No. 899,641
Claims priority, application Japan, Oct. 24, 1977, 52-41967
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—45

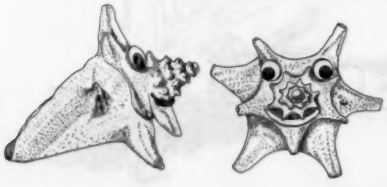
257,261
CAMERA TRIPOD
Yoshio Shinohara, Niiza, Japan, assignor to Slik Tripod Co., Ltd., Saitama, Japan
Filed Jun. 27, 1978, Ser. No. 919,720
Claims priority, application Japan, Feb. 24, 1978, 53-6497
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—45

257,262
AUTOMATED APPARATUS FOR CUTTING ROLLED STRIPS OF TRANSFORMER STEEL
Alexandr I. Khodorov, Sadovy proezd, 1, kv. 89; Boris A. Makeev, ulitsa Novgorodskaya, 6, kv. 29; Lev M. Stepochkin, ulitsa Komandarma Uborevicha, 40, a, kv. 22; Vadim I. Batozsky, Moskovsky prospekt, 28, kv. 21; Vladimir N. Sila, Streletsky pereulok, 14 a; Garri M. Korot, ulitsa Timurovtsev, 25 a, kv. 100; Adolf G. Eremenko, ulitsa III Internatsionala, 17, kv. 24, and Vitaly I. Zhuravlev, ulitsa Slinka, 14 a, kv. 50, all of Kharkov, U.S.S.R.
Filed Jun. 27, 1977, Ser. No. 810,289
Term of patent 3½ years
Int. Cl. D15—*09*
U.S. Cl. D15—127

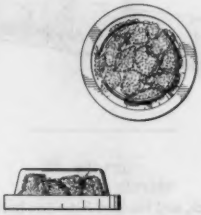
257,263
BOOK COVER OR SIMILAR ARTICLE
Hector A. Dauvergne, 419 E. Merle Ct., San Leandro, Calif. 94577
Filed Jan. 26, 1978, Ser. No. 872,735
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D19—26

257,264
DESK PLANNER HOLDER
Charles Savatteri, New York County, N.Y., assignor to Forward Industries, Inc., Brooklyn, N.Y.
Filed May 17, 1978, Ser. No. 907,251
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D19—26

257,265
ANIMATED PAPERWEIGHT
Mikeal W. Albert, 251 Westview, Columbus, Ohio 43214
Filed Apr. 19, 1978, Ser. No. 897,921
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—97



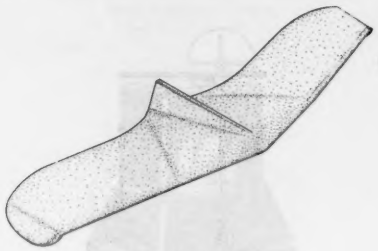
257,266
PAPER WEIGHT
Patty L. Curry, P.O. Box 354, Mooreland, Okla. 73852; George Huggins, 3604 S. Shawnee, Oklahoma City, Okla. 73119, and Seth Pickering, III, 3841 S. 90 E. Ave., Tulsa, Okla. 74145
Filed May 1, 1978, Ser. No. 901,764
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—97



257,267
GAME BOARD
Edward L. Long, 5956 Atteentee Rd., Springfield, Va. 22150
Filed Aug. 15, 1978, Ser. No. 933,976
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—33

257,268
GAME BOARD
Edward L. Long, 5956 Atteentee Rd., Springfield, Va. 22150
Filed Aug. 15, 1978, Ser. No. 933,978
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—33

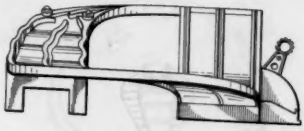
257,269
GLIDER
Gary L. Miller, 10300 Service Rd., Denair, Calif. 95316, and Robert M. Hibdon, 614 Lucerne Ave., Modesto, Calif. 95350
Filed Jan. 29, 1979, Ser. No. 7,630
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—88



257,270
JOINT ELEMENT FOR CONSTRUCTION SET
Richard J. Gabriel, Portland, Oreg., assignor to Matrix Toys, Inc., Beaverton, Oreg.
Filed May 8, 1978, Ser. No. 903,996
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—108

257,271
JOINT ELEMENT FOR CONSTRUCTION SET
Richard J. Gabriel, Portland, Oreg., assignor to Matrix Toys, Inc., Beaverton, Oreg.
Filed May 8, 1978, Ser. No. 903,979
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—108

257,272
TOY RACE TRACK FOR MINIATURE CARS
Fred D. Eddins, Mapleville; Donald H. Samuels, Warwick, both of R.I., and Sidney Tepper, Millburn, N.J., assignors to Hasbro Industries, Inc., Pawtucket, R.I.
Filed Dec. 4, 1978, Ser. No. 966,773
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—143



257,273
STUFFED TOY ANIMAL
Alan M. Armstrong, and Robert A. Berdell, both of 2315 Lakeview Ave., Los Angeles, Calif. 90039
Filed Nov. 21, 1978, Ser. No. 962,461
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—158

257,274
TOY ANIMAL FIGURE
Sharon R. Pellerin, 182 Wightman Ave., Norwich, Conn. 06360
Filed Dec. 7, 1978, Ser. No. 967,158
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—160

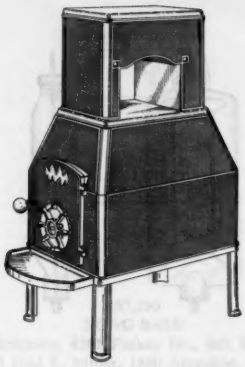
257,275
TOY FIGURE
Lawrence T. Jones, Playa Del Rey, and Robert S. Lee, Westlake, both of Calif., assignors to California R & D Center
Filed Feb. 2, 1979, Ser. No. 8,548
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—166

257,276
TOY FIGURE
Patrick T. A. Burdock, Broadstairs, England, assignor to Rovex Limited, London, England
Filed Mar. 2, 1978, Ser. No. 882,588
Claims priority, application United Kingdom, Sep. 2, 1977, 981381/77
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—01

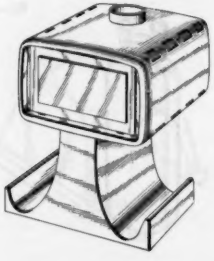
257,277
JOUNCING FOOT TOY
Maurice Gerak, 650 SW. 2nd Ave., Boca Raton, Fla. 33432
Filed Sep. 26, 1977, Ser. No. 836,692
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—240

257,278
STOVE
Henrik W. Sommerschild, Oslo, Norway, assignor to Aksjeselskapet Jotul, Oslo, Norway
Filed Sep. 12, 1978, Ser. No. 941,806
Claims priority, application Norway, May 30, 1978, 59240/78
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

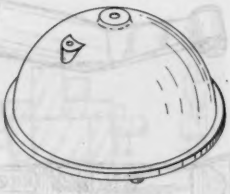
257,279
STOVE
Henrik W. Sommerschild, Oslo, Norway, assignor to Aksjeselskapet Jotul, Oslo, Norway
Filed Sep. 12, 1978, Ser. No. 941,807
Claims priority, application Norway, May 30, 1978, 59238/78
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



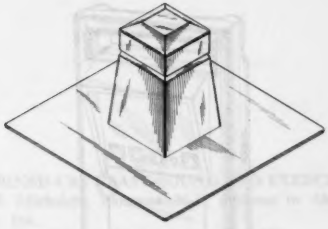
257,280
FIREPLACE STOVE
Michael A. Sands, 68 Ehret Ave., Harrington Park, N.J. 07640
Filed Oct. 2, 1978, Ser. No. 947,959
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



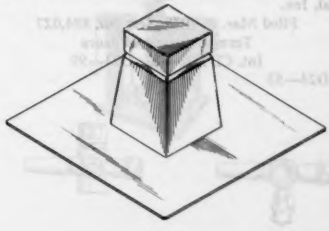
257,281
FOSSIL FUEL CATALYST GENERATOR
Robert Ganter, Mount Penn; Robert Whitmoyer, Selins Grove, and Palle Rye, Shillington, all of Pa., assignors to Thermics Corporation, Reading, Pa.
Filed Feb. 2, 1978, Ser. No. 874,437
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127



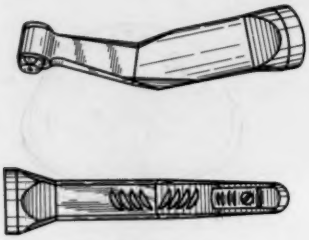
257,282
ROOF STACK VENT
Luther L. Roberts, North Plainfield, N.J., assignor to GAF Corporation, New York, N.Y.
Filed Feb. 8, 1979, Ser. No. 10,410
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—153



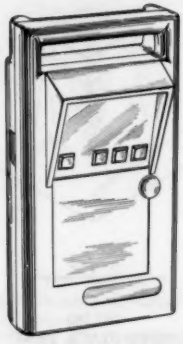
257,283
ROOF STACK VENT
Luther L. Roberts, North Plainfield, N.J., assignor to GAF Corporation, New York, N.Y.
Filed Feb. 8, 1979, Ser. No. 10,411
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—153



257,284
DENTAL HANDPIECE
Henri Leonard, Besancon, France, assignor to Micro-Mega S.A., France
Filed Oct. 17, 1977, Ser. No. 843,162
Claims priority, application France, Jun. 20, 1977, 77 1150
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—12

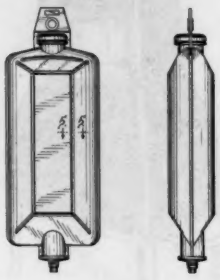


257,285
MEDICAL DIAGNOSTIC INSTRUMENT CASE
Paul O. Rawson, Easton, and Louis E. Nagy, Killingworth, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Nov. 28, 1977, Ser. No. 855,446
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D24—17



257,286
MEDICAL VALVE
Bern D. Folkman, Burbank, Calif., assignor to Tronomed International, Inc.
Filed Mar. 6, 1978, Ser. No. 884,027
Term of patent 14 years
Int. Cl. D23—*01;* D24—*99*
U.S. Cl. D24—53

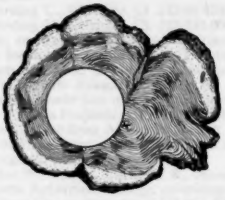
257,287
COLLAPSIBLE CONTAINER SUITABLE FOR MEDICAL FLUIDS
Louis T. Pagels, Hanover Park, Ill., assignor to Automatic Liquid Packaging, Inc.
Filed Feb. 10, 1978, Ser. No. 876,850
Term of patent 14 years
Int. Cl. D24—*04;* D9—*01*
U.S. Cl. D24—58



257,288
RECEPTACLE SUITABLE FOR MEDICAL FLUIDS
Louis T. Pagels, Hanover Park, Ill., assignor to Automatic Liquid Packaging, Inc.
Filed Feb. 10, 1978, Ser. No. 876,853
Term of patent 14 years
Int. Cl. D24—*04;* D9—*01*
U.S. Cl. D24—58

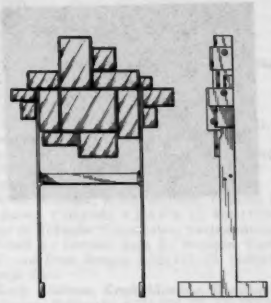
257,289
CRYOBIOLOGICAL VESSEL
Boris M. Akimov, ulitsa Dzerzhinskogo, 81/85, kv. 16; Anatoly I. Voronov, ulitsa Chaikovskogo, 11, kv. 6; Viktor I. Morozov, ulitsa Zernovaya, 16, kv. 90; Vitaly I. Shalaev, ulitsa Bairona, 161 G, kv. 32; Viktor V. Demenko, poselok Khoroshevo, pereulok Gorkogo, 17; Georgy S. Tsoglin, ulitsa Geroev Truda, 38, kv. 68, and Albina T. Rjumina, ulitsa Gvardeitsev Sheronintsev, 67, kv. 138, all of Kharkov, U.S.S.R.
Filed Nov. 7, 1977, Ser. No. 849,458
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—99

257,290
BONG BASE
William V. Erickson, 4261 Paskay Dr., Salt Lake City, Utah 84120, and Fred L. Miller, 1440 Arapahoe, Salt Lake City, Utah 84104
Filed Feb. 13, 1978, Ser. No. 877,395
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D27—05



257,291
VAPOR HOOD FOR HAIR CARE
Luigi G. Losenno, 4525 Drexel Ave. South, Edina, Minn. 55424
Filed Jul. 3, 1978, Ser. No. 921,353
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—19

257,292
MODULAR HOUSE FOR SMALL PETS
Desmond B. Brown, 1231½ E. Genesee St., Syracuse, N.Y. 13210
Filed May 14, 1979, Ser. No. 38,863
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1



257,293
COMBINED CAT PLAYGROUND AND EXERCISER
Robert J. Michalski, Paramus, N.J., assignor to Abeta Pet Supply, Inc.
Filed Jan. 23, 1979, Ser. No. 5,695
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—42

257,294

EMBOSSED PAPER TOWELING

Donald A. Gilling, Neenah, and Lawrence A. Walbrun, Menasha, both of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Aug. 22, 1978, Ser. No. 936,580

Term of patent 14 years

Int. Cl. D5—*06*

U.S. Cl. D59—2 B

257,295

NONWOVEN SHEET MATERIAL OR THE LIKE

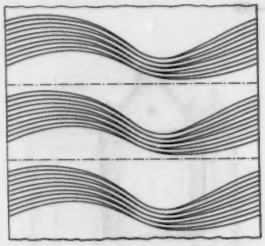
Charlotte D. Joachim, Cincinnati, Ohio; Alvin C. March, Aurora, Ind., and Kay S. Ratliff, Hamilton, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 13, 1978, Ser. No. 960,136

Term of patent 14 years

Int. Cl. D5—*06*

U.S. Cl. D92—1 P



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF OCTOBER, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See—*
Cale, Albert D., Jr., 4,226,861, Cl. 424-244.000.

A/S Niro Atomizer: *See—*
Larsson, Finn H.; and Schwartzbach, Christian, 4,226,603, Cl. 55-260.000.

A-T-O Inc.: *See—*
Carter, Sidney T., 4,226,660, Cl. 156-357.000.

A 1000 Words Incorporated: *See—*
Skarman, John S., 4,226,517, Cl. 354-75.000.

Abar Corporation: *See—*
Jones, William R.; and Gunther, Rush B., 4,227,032, Cl. 13-20.000.

Abbott, Joseph L. Laminated tube for collapsible containers and method of making same. 4,226,337, Cl. 222-107.000.

Abbott Laboratories: *See—*
Arendsen, David L., 4,226,877, Cl. 424-273.00P.
Genese, Joseph N., 4,226,236, Cl. 128-218.00M.
Kyncl, John J., 4,226,773, Cl. 424-273.00P.
Lerma, Jesse P., 4,227,155, Cl. 330-11.000.
McAlpine, James B., 4,226,979, Cl. 536-17.00R.
Sato, Moriyuki; Mochida, Kenichi; Yoshiie, Shigeo; and Mori, Yasuki, 4,226,980, Cl. 536-17.00R.

Abbou, Clement: *See—*
Rey, Pierre; Leandri, Jacqueline; and Abbou, Clement, 4,225,979, Cl. 3-1.000.

Abdullah, Mukhtar; and Armbruster, Frederick C., to CPC International Inc. Method using glucoamylase immobilized on porous alumina. 4,226,937, Cl. 435-96.000.

Abramov, Jury V.: *See—*
Anfilov, Igor V.; Abramov, Jury V.; Ershov, Geny S.; Bogomolov, Valentin G.; Kaidoshko, Eduard A.; Remizov, Jury B.; Rozhenko, Anatoly L.; and Suvorov, Gennady P., 4,226,514, Cl. 354-7.000.

Absolon, Victor J.; Hurst, George T.; Worboys, John C.; Barnett, George H.; and Dickson, Ross P., to ICI Australia Limited. Process of separating asbestos fibers and product thereof. 4,226,672, Cl. 162-3.000.

ABU Aktiebolag: *See—*
Karlsson, Jarding U., 4,226,384, Cl. 242-84.420.
Karlsson, Jarding U., 4,226,387, Cl. 242-212.000.

Achelpohl, Fritz; and Tetenborg, Konrad, to Windmoller & Holscher. Lifting tackle for filled sacks. 4,226,458, Cl. 294-88.000.

Achenbach, Karl; and Turk, Gunter, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for converting silicon dioxide containing waste flue dust to crystalline zeolitic molecular sieves of type Y with a Faujasite structure. 4,226,837, Cl. 423-118.000.

Ackel, Sabet, to Daimler-Benz Aktiengesellschaft. Fastening arrangement for removable storage services. 4,226,461, Cl. 296-37.140.

Ackerman, George, co-executor: *See—*
Cochrane, Ian W.; Tucker, Frederick R., deceased; Tucker, Mary, co-executrix; Ackerman, George, co-executor; and Canada Permanent Trust Co., co-executor, 4,225,982, Cl. 3-7.000.

Acme-Cleveland Corporation: *See—*
Haner, Lambert, 4,227,134, Cl. 318-685.000.

Acs, Miklos: *See—*
Paradi, Laszlo; Acs, Miklos; Szucs, Tibor; and Konkoly, Tibor, 4,227,065, Cl. 219-121.0EM.

Adachi, Akio: *See—*
Yasuda, Katsuya; and Adachi, Akio, 4,227,180, Cl. 340-166.00R.

Adam, John E.: *See—*
Thomas, William J.; and Adam, John E., 4,225,997, Cl. 15-184.000.

Adams, George. Fruit picking apparatus. 4,226,075, Cl. 56-334.000.

Adams, Kenneth D., to Singer Company, The. Sewing machine six motion work feeding mechanism. 4,226,199, Cl. 112-308.000.

AGA Aktiebolag: *See—*
Knoos, Stellan, 4,226,226, Cl. 126-432.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Paquet, Denis; Thou, Kaing S.; and Alais, Charles, 4,226,893, Cl. 426-564.000.

AGFA-GEVAERT N.V.: *See—*
Plessers, Hendrik S.; and Hellemans, Julianus J., 4,227,089, Cl. 250-468.000.
Van Beeck, Walter P., 4,226,538, Cl. 356-430.000.

Ahumada, Gregg D.: *See—*
Belcher, Robert A.; and Ahumada, Gregg D., 4,227,174, Cl. 340-81.00R.

Aichert, Hans; Hoffmann, Otto-Horst; Stark, Friedrich; and Stephan, Herbert, to Leybold-Heraeus GmbH. Heating system for vacuum coating apparatus. 4,226,587, Cl. 432-122.000.

Aiga, Makoto: *See—*
Miyata, Katsuharu; Aiga, Makoto; and Hasegawa, Seiji, 4,227,008, Cl. 560-25.000.

Air & Refrigeration Corp.: *See—*
Yaeger, Ronald J.; and Keller, Gerald W., 4,226,606, Cl. 62-238.000.

Airco, Inc.: *See—*
Van Don, Frank, 4,226,605, Cl. 62-52.000.

Aisin Chemical Company, Limited: *See—*
Yamamoto, Yasunobu; Matsuo, Mitsumasa; and Nakagawa, Atsushi, 4,226,816, Cl. 264-29.400.

Aisin Seiki Kabushiki Kaisha: *See—*
Kagata, Tooru, 4,226,315, Cl. 192-38.000.
Masuda, Noboru; and Suzuki, Mitsuyuki, 4,227,171, Cl. 338-33.000.

Aizawa, Tatsuo: *See—*
Nakazawa, Toru; Nagahashi, Keiichi; and Aizawa, Tatsuo, 4,226,928, Cl. 430-57.000.

Ajisawa, Yukiyoshi: *See—*
Iizuka, Kinji; Akahane, Kenji; Momose, Denichi; Kamijo, Yukio; and Ajisawa, Yukiyoshi, 4,226,878, Cl. 424-273.00R.

Akademiet for de Tekniske Videnskaber, Svejsecentralen: *See—*
Lund, Svend A.; Iversen, Sven E.; Petersen, Carl E. T.; Bogen, Erik T.; and Dam, Jorgen, 4,226,122, Cl. 73-609.000.

Akahane, Kenji: *See—*
Iizuka, Kinji; Akahane, Kenji; Momose, Denichi; Kamijo, Yukio; and Ajisawa, Yukiyoshi, 4,226,878, Cl. 424-273.00R.

Akhundov, Arif A.: *See—*
Zeinalov, Bagadur K.; Aliev, Vagab S.; Akhundov, Arif A.; Bocharov, Jury N.; Lugovskoi, Vladimir D.; and Miramanian, Akop A., 4,227,020, Cl. 562-511.000.

Akred, Brian J.; Lambie, Alan J.; and Maden, John, to Albright & Wilson Limited. Sulph(on)ation process. 4,226,796, Cl. 260-459.00R.

Aktiebolaget SKF: *See—*
Ostling, Sture; and Persson, Stig, 4,226,571, Cl. 417-63.000.

Akzona Incorporated: *See—*
Bellino, Robert A., 4,226,504, Cl. 350-96.230.
Griset, Ernest J., Jr., 4,226,076, Cl. 57-12.000.

Alais, Charles: *See—*
Paquet, Denis; Thou, Kaing S.; and Alais, Charles, 4,226,893, Cl. 426-564.000.

Albany International Corp.: *See—*
Bolton, Joseph A.; and Huhtala, Olavi A., 4,225,991, Cl. 8-151.000.

Albe SA: *See—*
Buzzi, Ugo, 4,226,107, Cl. 72-121.000.

Albers, Edwin W.: *See—*
Seese, Mark A.; Albers, Edwin W.; and Magee, John S., Jr., 4,226,743, Cl. 252-453.000.

Albright, James A.; and Kmiec, Chester J., to Velsicol Chemical Corporation. 3,9-Bromophenoxy-2,4,8,10-tetraoxa-3,9-diphosphaspiro(5.5)undecane-3,9-dioxides. 4,226,813, Cl. 260-927.00R.

Albright, Jay D.: *See—*
McEvoy, Francis J.; and Albright, Jay D., 4,226,775, Cl. 260-326.330.

Albright & Wilson Limited: *See—*
Akred, Brian J.; Lambie, Alan J.; and Maden, John, 4,226,796, Cl. 260-459.00R.

Albus, James F., to Aljet Equipment Company. Material feed system for jet mills and flash dryers. 4,226,027, Cl. 34-57.00R.

Alcan Research and Development Limited: *See—*
Cooke, William E.; and Innes, Robert A., 4,226,680, Cl. 204-28.000.
Dewing, Ernest W.; and Southam, Frederick W., 4,226,618, Cl. 75-68.00A.

Alcoa Nederland B.V.: *See—*
Maaijwee, Ludoricus C., 4,226,047, Cl. 47-1.100.

Alcuri, Louis F., Jr.: *See—*
Aliotta, Joseph; and Alcuri, Louis F., Jr., 4,226,622, Cl. 75-251.000.

Aldrich, Joe L., to Keystone International, Inc. Level detector. 4,226,118, Cl. 73-290.00V.

Aldridge, Clyde L.: *See—*
Bearden, Roby, Jr.; and Aldridge, Clyde L., 4,226,742, Cl. 252-431.00C.

Alexander, William M. Leather yarn producing machine. 4,226,098, Cl. 69-2.000.

Aliev, Vagab S.: *See—*
Zeinalov, Bagadur K.; Aliev, Vagab S.; Akhundov, Arif A.; Bocharov, Jury N.; Lugovskoi, Vladimir D.; and Miramanian, Akop A., 4,227,020, Cl. 562-511.000.

Aliotta, Joseph; and Alcuri, Louis F., Jr., to Engelhard Minerals & Chemicals Corporation. Corrosion-resistant dental alloy. 4,226,622, Cl. 75-251.000.

Aljet Equipment Company: *See—*
Albus, James F., 4,226,027, Cl. 34-57.00R.

Allen, Robert R. Portable disposable rack for an automobile. 4,226,354, Cl. 224-318.000.

Allied Chemical Corporation: *See*—
Barrett, Joseph J.; and Peterson, Otis G., 4,227,159, Cl. 331-94.50P.
Booth, Robert E.; Evans, Francis E.; Eibeck, Richard E.; and Robinson, Martin A., 4,227,027, Cl. 585-465.000.
Masilamani, Divakaran; and Rogic, Milorad M., 4,227,028, Cl. 585-941.000.
Pieters, Wim J. M.; Gates, William E.; and Wenger, Franz, 4,226,812, Cl. 570-157.000.

Allied Products Corporation: *See*—
Watson, Charles R., Jr.; and Eichner, Mary A., 4,226,969, Cl. 528-93.000.

Allis-Chalmers Corporation: *See*—
Dilworth, Louis R., 4,226,831, Cl. 422-173.000.

Almasfuzitoi Timfoldgyar: *See*—
Boros, Jozsef; Csillag, Zsolt; Ferenczi, Tibor; Kalman, Tibor; Lengyel, Laszlo; Matyasi, Jozsef; Orban, Ferenc; Solymar, Karoly; Toth, Bela; Toth, Lajos; Voros, Istan; Wentzely, Kalman; Zambo, Janos; and Zoldi, Jozsef, 4,226,838, Cl. 423-121.000.

Alphadyne, Inc.: *See*—
Hansen, Lawrence F., 4,226,299, Cl. 181-284.000.

Alsthom-Atlantique: *See*—
Lecoffre, Yves, 4,226,705, Cl. 209-164.000.

Alsy Manufacturing Inc.: *See*—
Gindel, Alvin, 4,226,193, Cl. 108-111.000.

Alt, Gerard H., to Monsanto Company. Plant growth regulators. 4,226,615, Cl. 71-121.000.

Aluminum Pechiney: *See*—
Reh, Lothar; Plass, Ludolf; Marchessaux, Philippe; and Sood, Raman, 4,226,844, Cl. 423-625.000.

Amax Resource Recovery Systems, Inc.: *See*—
Styron, Robert W., 4,226,630, Cl. 106-85.000.

Amboss, Kurt, to Hughes Aircraft Company. Electron beam microfabrication apparatus and method. 4,227,090, Cl. 250-492.00A.

Amerace Corporation: *See*—
Goldberg, Bruce S.; and Shah, Mahendra, 4,226,926, Cl. 429-252.000.
Mazzeo, Charles F.; and Cotler, Catherine K., 4,226,494, Cl. 339-103.00R.

American Cyanamid Company: *See*—
Chen, Sow-Mei L.; and Grudzinskas, Charles V., 4,227,011, Cl. 560-121.000.
DiLecne, Roland R.; and Szita, Jeno G., 4,226,989, Cl. 544-198.000.
McEvoy, Francis J.; and Albright, Jay D., 4,226,775, Cl. 260-326.330.
Murdock, Keith C.; Durr, Frederick E.; Damiani, Martin R.; and Izzo, Patrick T., 4,226,869, Cl. 424-258.000.
Rauhut, Michael M.; Tseng, Shin-Shyong; and Mohan, Arthur G., 4,226,738, Cl. 252-188.3CL.
Shepherd, Robert G., 4,227,014, Cl. 562-457.000.
Siegman, Edwin J., 4,226,817, Cl. 264-39.000.

American Home Products Corporation: *See*—
Demerson, Christopher A.; and Humber, Leslie G., 4,226,860, Cl. 424-240.000.

American Machine & Hydraulics: *See*—
Cole, Richard O., 4,226,449, Cl. 285-382.200.

American Sterilizer Company: *See*—
Baran, Walter J., 4,226,642, Cl. 134-10.000.

Ametek, Inc.: *See*—
Hyatt, Robert L.; Niessner, Norbert H.; and Sumser, Richard D., 4,226,575, Cl. 417-423.00A.

AMF Incorporated: *See*—
Panepinto, Louis, 4,226,412, Cl. 272-68.000.

Amoco Production Company: *See*—
Jones, Loyd W., 4,226,722, Cl. 210-287.000.

Anaconda Company, The: *See*—
Furness, Kenneth M.; Quinonez, Manuel; and Low, Stanley T., 4,226,714, Cl. 210-723.000.

Andco Industries, Inc.: *See*—
Bruckenstein, Stanley, 4,226,710, Cl. 210-714.000.

Andersen, Arthur L. Fracture board. 4,226,231, Cl. 128-134.000.

Anderson, Edwin A.: *See*—
Webb, Derrel D.; and Anderson, Edwin A., 4,226,289, Cl. 175-297.000.

Anderson, Richard J.; and Baer, Ted A., to Zoecon Corporation. 2-(4-Trifluoromethylphenylamino)-3-methylbutanoic acid esters and intermediates therefor. 4,226,802, Cl. 260-465.00E.

Anfilov, Igor V.; Abramov, Jury V.; Ershov, Geny S.; Bogomolov, Valentin G.; Kaidoshko, Eduard A.; Remizov, Jury B.; Rozhenko, Anatoly L.; and Suvorov, Gennady P. Electrographic photocomposing machine. 4,226,514, Cl. 354-7.000.

Anic, S.p.A.: *See*—
Redaelli, Vincenzo; De Simone, Renato; and Platone, Edoardo, 4,226,810, Cl. 568-386.000.

Antonov, Bogomil T.; Panayotov, Stoyan Y.; and Lyutakov, Ognyan V., to BRV "Electronna Obrabotka na Materialite". Apparatus for the spark deposition of metals. 4,226,697, Cl. 204-298.000.

Antos, George J.: *See*—
Flagg, John F.; and Antos, George J., 4,227,026, Cl. 585-434.000.

Antosz, Frederick J.: *See*—
Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., 4,226,936, Cl. 435-55.000.

Appleby, Paul E.; Folden, Denver C.; Stalter, Joseph F., Jr.; and Swanson, Harry R., to Goodyear Tire & Rubber Company, The. Tire carcass assembly. 4,226,656, Cl. 156-132.000.

Aragon, Robert C. Synthetic Spanish or Mission tile roofing system. 4,226,070, Cl. 52-57.000.

Arakawa, Tatsumi: *See*—
Kimura, Muneaki; Arakawa, Tatsumi; Ozaki, Masaru; and Kobayashi, Hidehiko, 4,226,924, Cl. 429-126.000.

Araki, Kunio: *See*—
Sasaki, Takashi; Hagiwara, Miyuki; Araki, Kunio; Ishitani, Hayao; Saito, Eisuke; and Komatsu, Kyozi, 4,226,687, Cl. 204-159.130.

Archifar Industrie Chimiche Del Trentino S.p.A.: *See*—
Marsili, Leonardo; Rossetti, Vittorio; and Pasqualucci, Carmine, 4,226,765, Cl. 260-239.30P.

Arendsen, David L., to Abbott Laboratories. Pyrazoles active in the central nervous system. 4,226,877, Cl. 424-273.00P.

Argus Chemical Corp.: *See*—
Nakahara, Yutaka; Haruna, Tohru; and Tazima, Kenji, 4,226,991, Cl. 544-221.000.

Arkhipova, Zinaida V.: *See*—
Grigoriev, Vasily A.; Arkhipova, Zinaida V.; Balaev, Gurgen A.; Bakajutov, Nikolai G.; Vysotskaya, Vera I.; Polyakov, Arkady V.; and Zapletnyak, Vitaly M., 4,226,965, Cl. 526-116.000.

Armaturenfabrik Hermann Voss GmbH & Co.: *See*—
Kramer, Dieter, 4,226,445, Cl. 285-39.000.

Armbruster, Frederick C.: *See*—
Abdullah, Mukhtar; and Armbruster, Frederick C., 4,226,937, Cl. 435-96.000.

Armstrong Cork Company: *See*—
Gross, William G.; and Hutchinson, Robert H., 4,226,674, Cl. 162-109.000.

Armstrong, Donald E.: *See*—
Shaffer, John W.; and Armstrong, Donald E., 4,227,240, Cl. 362-13.000.

Armstrong, Eldon L.; and Leonardi, Samuel J., to Mobil Oil Corporation. Lubricant compositions stabilized against ultra-violet degradation. 4,226,733, Cl. 252-42.700.

Armstrong, James A.: *See*—
Williams, Ralph E.; Brown, Larry L.; Marchese, Robert P.; Russell, Philip A.; and Armstrong, James A., 4,226,115, Cl. 73-28.000.

Armstrong, William A., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Expanded zinc electrode for dry cells. 4,226,920, Cl. 429-94.000.

Artos Dr.-Ing Meier Windhorst KG: *See*—
Rommel, Heinz, 4,226,097, Cl. 68-205.00R.

Arturo Salice S.p.A.: *See*—
Salice, Luciano, 4,226,001, Cl. 16-145.000.

Artzer, Richard F., to Covington Brothers Building Systems, Inc. Structural panel. 4,226,067, Cl. 52-309.120.

Asahi-Dow Limited: *See*—
Yoshino, Akira; Iwami, Isamu; and Wakabayashi, Tsuneo, 4,226,908, Cl. 428-310.000.

Asahi Glass Company, Limited: *See*—
Takahashi, Shiro; and Tsuchimoto, Yoshihiro, 4,226,564, Cl. 414-166.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Kimura, Muneaki; Arakawa, Tatsumi; Ozaki, Masaru; and Kobayashi, Hidehiko, 4,226,924, Cl. 429-126.000.
Shibasaki, Ichiro; Ohmura, Kaoru; Kimura, Takeo; and Kobayashi, Hidehiko, 4,227,039, Cl. 174-68.500.
Tazuke, Shigeo; and Nagahara, Hajime, 4,226,967, Cl. 528-74.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Kawasaki, Masahiro; and Takaoka, Yukio, 4,226,521, Cl. 354-271.000.

Asano, Kiro; Tamura, Fumio; Kawai, Yoshio; and Yamaki, Kiyoshi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Raw composition for carbon articles. 4,226,633, Cl. 106-269.000.

Asano, Masaharu, to Nissan Motor Company, Limited. Closed loop mixture control system for internal combustion engine. 4,226,221, Cl. 123-440.000.

Aschwanden, Felix, to RCA Corporation. Self-stabilizing analog to digital converter useful in phase locked loop tuning systems. 4,227,186, Cl. 340-347.0CC.

ASEA Aktiebolag: *See*—
Jansson, Gunnar; and Linderoth, Gustaf, 4,226,823, Cl. 264-174.000.

Ashland Oil, Inc.: *See*—
Toeniskoetter, Richard H.; and Spiwak, John J., 4,226,626, Cl. 106-38.350.

Ashton, Richard D. A. Display rack. 4,226,190, Cl. 108-11.000.

Ashworth, John. Photo-slide handler and viewer. 4,226,038, Cl. 40-361.000.

Asoiants, Grigory B.: *See*—
Paton, Boris E.; Latash, Jury V.; Grigorenko, Georgy M.; Lisovoi, Jury V.; Stepanenko, Viktor V.; and Asoiants, Grigory B., 4,227,031, Cl. 13-18.00A.

Aspisi, Christian R.: *See*—
Demosthene, Claude G.; and Aspisi, Christian R., 4,226,995, Cl. 544-334.000.

Aspro, Inc.: *See*—
St. John, Richard C., 4,226,320, Cl. 192-105.0CD.

Assi Can Aktiebolag: *See*—
Berg, Rolf, 4,226,652, Cl. 156-69.000.

Atlantic Richfield Company: *See*—
Hawley, Wilbur W., 4,226,256, Cl. 136-244.000.
Smith, Robert H., 4,226,601, Cl. 44-10.00D.

Atlas Copco Aktiebolag: *See*—
Prebensen, Soren P., 4,226,559, Cl. 405-303.000.
Schorling, Stefan H. G., 4,226,403, Cl. 254-273.000.

Auger, Robert H., to Saint-Gobain Industries. Swiveling solar reflector with multiple reflecting elements supported by prefabricated cambered members. 4,226,506, Cl. 350-292.000.

Ault, Robert T.: *See—*
Waid, George M.; and Ault, Robert T., 4,226,645, Cl. 148-2.000.

Aurich, Volker G.: *See—*
Bakker, Pieter M.; Kind, Cornelis E.; and Aurich, Volker G., 4,226,797, Cl. 260-460.000.

Automatic Liquid Packaging, Inc.: *See—*
Weiler, Gerhard H.; and Nagel, Dieter H., 4,226,334, Cl. 215-355.000.

Autovox S.p.A.: *See—*
Dellantonio, Ezio F., 4,226,128, Cl. 74-10.00R.

Avery International Corporation: *See—*
Reed, Charles F., 4,226,150, Cl. 83-346.000.

Awaya, Herbert Y.; and Hieda, Ronald S. Rubber tire with wear indicator therein. 4,226,274, Cl. 152-330.00A.

Awaya, Juichi: *See—*
Omura, Satoshi; Kitao, Chiaki; Nakagawa, Akira; Tanaka, Haruo; Awaya, Juichi; and Oiwa, Ruiko, 4,226,879, Cl. 424-278.000.

Ayer, Donald E., to Upjohn Company, The. 2-Decarboxy-2-aminomethyl-trans-4,5-didehydro-PGI$_1$ compounds. 4,226,984, Cl. 542-426.000.

Ayres, Frederick C.; and Little, Philip V., to Bonnella Switches Limited. Locating means for an electric switch. 4,227,060, Cl. 200-296.000.

B. F. Goodrich Company, The: *See—*
Bush, John R., 4,226,655, Cl. 156-132.000.
Cowfer, Joseph A.; Jablonski, Dane E.; Kovach, Ronald M.; and Magistro, Angelo J., 4,226,798, Cl. 260-465.300.
Kroenke, William J., 4,226,987, Cl. 544-64.000.

Baas, Hendrik B., to B.V. Machinefabriek en Ijzergieterij Holland-Filter press. 4,226,721, Cl. 210-225.000.

Babcock, Donner F.; Deber, Charles M.; Debono, Manuel; Molloy, R. Michael; and Pfeiffer, Douglas R., to Eli Lilly and Company. Halo-A-23187 derivatives. 4,227,002, Cl. 548-216.000.

Baboian, Robert; Haynes, Gardner S.; and Delagi, Richard G., to Texas Instruments Incorporated. Cathodic protection system for a motor vehicle. 4,226,694, Cl. 204-196.000.

Baer, Karl: *See—*
Fouquet, Gerd; Merger, Franz; and Baer, Karl, 4,226,780, Cl. 260-348.160.

Baer, Ted A.: *See—*
Anderson, Richard J.; and Baer, Ted A., 4,226,802, Cl. 260-465.00E.

Bain, Orville J.: *See—*
Jelinek, Jerry G.; and Bain, Orville J., 4,226,431, Cl. 277-165.000.

Bain-Smith, Timothy: *See—*
Spence-Bate, Harry A. H.; and Bain-Smith, Timothy, 4,226,526, Cl. 355-53.000.

Bakajutov, Nikolai G.: *See—*
Grigoriev, Vasily A.; Arkhipova, Zinaida V.; Balaev, Gurgen A.; Bakajutov, Nikolai G.; Vysotskaya, Vera I.; Polyakov, Arkady V.; and Zapletnyak, Vitaly M., 4,226,965, Cl. 526-116.000.

Baker, Arleigh B.: *See—*
Root, James A.; and Baker, Arleigh B., 4,227,258, Cl. 455-348.000.

Baker, Thomas E.; and Robertson, John P. Electrical totalizer. 4,227,070, Cl. 235-92.0ST.

Bakker, Pieter M.; Kind, Cornelis E.; and Aurich, Volker G., to Shell Oil Company. Preparation of monoalkyl sulfuric acids and their salts. 4,226,797, Cl. 260-460.000.

Balaban, Alvin R.; and Steckler, Steven A., to RCA Corporation. Multiplexing arrangement for a television signal processing system. 4,227,217, Cl. 358-192.100.

Balaev, Gurgen A.: *See—*
Grigoriev, Vasily A.; Arkhipova, Zinaida V.; Balaev, Gurgen A.; Bakajutov, Nikolai G.; Vysotskaya, Vera I.; Polyakov, Arkady V.; and Zapletnyak, Vitaly M., 4,226,965, Cl. 526-116.000.

Balfour, Ronald S. Game racket hand grip. 4,226,418, Cl. 273-75.000.

Ballard, James L., to General Electric Company. Composite package. 4,226,327, Cl. 206-320.000.

Balzer, Winton E.; and Knobel, Kenneth M. Apparatus for applying a film lid to a cup. 4,226,072, Cl. 53-298.000.

Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito. Direct current motor with double layer armature windings. 4,227,107, Cl. 310-198.000.

Bancel, Guy H.; and Varigas, Francois N. E., to Bancel, Guy Henri. Exhaust device for internal combustion engines. 4,226,298, Cl. 181-226.000.

Bancel, Guy Henri: *See—*
Bancel, Guy H.; and Varigas, Francois N. E., 4,226,298, Cl. 181-226.000.

Bando, Koichiro: *See—*
Saito, Akira; Miura, Yushichi; and Bando, Koichiro, 4,226,677, Cl. 202-138.000.

Banno, Shuji: *See—*
Yamagata, Totaro; and Banno, Shuji, 4,226,718, Cl. 210-219.000.

Banthrico Inc.: *See—*
Thomas, Ulrich H., 4,226,044, Cl. 46-4.000.

Baran, Walter J., to American Sterilizer Company. System providing for decontamination washing and/or biocidal treatment. 4,226,642, Cl. 134-10.000.

Barbe, Pier C.: *See—*
Luciani, Luciano; Kashiwa, Norio; Barbe, Pier C.; and Toyota, Akinori, 4,226,741, Cl. 252-429.00B.

Barefoot, Edgar D.: *See—*
Pelletier, Charles A.; and Barefoot, Edgar D., 4,226,113, Cl. 73-40.700.

Barer, Sol J., to Celanese Corporation. Insecticidal compositions. 4,226,881, Cl. 424-285.000.

Bargeron, Richard J.: *See—*
Whipps, George E.; and Bargeron, Richard J., 4,226,553, Cl. 405-106.000.

Barnes, Sidney, to Nuclear Power Company Limited. Liquid metal cooled nuclear reactors. 4,226,676, Cl. 176-38.000.

Barnett, George H.: *See—*
Absolon, Victor J.; Hurst, George T.; Worboys, John C.; Barnett, George H.; and Dickson, Ross P., 4,226,672, Cl. 162-3.000.

Barnett, John C. Container and container lid. 4,226,456, Cl. 294-1.00B.

Barnoski, Raymond, to Illinois Tool Works Inc. Electrical keyswitch. 4,227,163, Cl. 335-205.000.

Barrentine, Earl, to Chore-Time Equipment, Inc. Egg collector. 4,226,211, Cl. 119-48.000.

Barrett, Joseph J.; and Peterson, Otis G., to Allied Chemical Corporation. Common-resonator pre-locked laser. 4,227,159, Cl. 331-94.50P.

Barrow, Billy E. Waste heat recovery device. 4,226,089, Cl. 62-84.000.

Barten, Hans M.; and Pfister, Frieder K. H., to Pfister GmbH. Method for the contactless determination of features of meat quality. 4,226,540, Cl. 356-445.000.

Bartholomew, Roger F.; Dorfeld, William G.; Murphy, James A.; Pierson, Joseph E.; Stookey, Stanley D.; and Tick, Paul A., to Corning Glass Works. Cuprous copper and/or silver halophosphate glasses. 4,226,628, Cl. 106-47.00R.

BASF Aktiengesellschaft: *See—*
Bewert, Wolfgang; and Littmann, Wolfgang, 4,226,799, Cl. 260-465.00E.
Fouquet, Gerd; Merger, Franz; and Baer, Karl, 4,226,780, Cl. 260-348.160.
Grosskinsky, Otto-Alfred; Petri, Norbert; Hein, Johannes; and Leitner, Hans, 4,227,021, Cl. 562-513.000.
Oeser, Heinz-Guenter; Koenig, Karl-Heinz; and Mangold, Dietrich, 4,226,811, Cl. 568-937.000.
Schirmer, Ulrich; Wuerzer, Bruno; and Rohr, Wolfgang, 4,226,613, Cl. 71-100.000.
Schirmer, Ulrich; Rohr, Wolfgang; Wuerzer, Bruno; and Fett, Kurt, 4,227,007, Cl. 560-25.000.

BASF Farben & Fasern AG: *See—*
Dimroth, Peter; Knittel, Helmut; Seitz, August; and Wolff, Dietrich, 4,226,634, Cl. 106-288.00Q.

Basset, Marcel: *See—*
Semur, Pierre; and Basset, Marcel, 4,227,094, Cl. 307-113.000.

Bastenhof, Dirk, to Societe d'Etudes de Machines Thermiques S.E.M.T. Method of quick pneumatic braking of a diesel engine. 4,226,216, Cl. 123-41.00R.

Bastide, Paul. Auxiliary submersible for deep-sea work. 4,226,205, Cl. 114-337.000.

Batt, Richard L., to Collier-Keyworth Company. Locking hinge joint. 4,226,549, Cl. 403-92.000.

Batzer, Hans; Habermeier, Jurgen; and Porret, Daniel, to Ciba-Geigy AG. Dialcohols. 4,227,005, Cl. 548-312.000.

Bauer, Alfred, to Braun Aktiengesellschaft. Quasi-analog channel indicator for radio receivers. 4,227,254, Cl. 455-154.000.

Bauer, Oscar W., to Witco Chemical Corporation. Sulfonation of oils. 4,226,805, Cl. 260-505.00R.

Bauerle, Gerhard, to Bunker Ramo Corporation. Electrical contact. 4,226,499, Cl. 339-258.00R.

Baum, Kurt; and Berkowitz, Philip T., to United States of America, Navy. 3-Fluoro-3-nitrooxetane. 4,226,777, Cl. 260-333.000.

Baxter Travenol Laboratories, Inc.: *See—*
Beddow, David V., 4,226,328, Cl. 206-364.000.
Fitzgerald, James A.; Kopp, Clinton V.; and Washington, Freddie L., 4,226,378, Cl. 242-18.00G.
Kersten, Jean, 4,226,124, Cl. 73-706.000.

Bayer Aktiengesellschaft: *See—*
Wolf, Wilhelm; and Puhl, Meinhard, 4,227,018, Cl. 562-494.000.

Bayerische Motoren Werke Aktiengesellschaft: *See—*
Erdmann, Klaus, 4,226,304, Cl. 188-18.00A.
Haslbeck, Peter; and Kocherscheidt, Hans, 4,226,217, Cl. 123-41.620.

Bazil, Ralph E., to King Radio Corporation. Deviation driver circuit. 4,227,095, Cl. 307-229.000.

Bearden, Roby, Jr.; and Aldridge, Clyde L., to Exxon Research & Engineering Co. Catalyst for the hydroconversion of heavy hydrocarbons. 4,226,742, Cl. 252-431.00C.

Beasley, Harry. Connector system for elongate members. 4,226,551, Cl. 403-219.000.

Beaton, John M.: *See—*
Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., 4,226,936, Cl. 435-55.000.

Beatrice Foods Co.: *See—*
Peterson, Dean, 4,226,043, Cl. 43-112.000.

Beckman Instruments, Inc.: *See—*
Jacobson, Kenneth E., 4,226,359, Cl. 233-24.000.
Momany, Frank A., 4,226,857, Cl. 424-177.000.

Becton, Dickinson and Company: *See—*
Krug, Albert E., 4,226,036, Cl. 40-21.00C.
Percarpio, Edward P., 4,226,333, Cl. 215-247.000.

Beddow, David V., to Baxter Travenol Laboratories, Inc. Catheterization package. 4,226,328, Cl. 206-364.000.

Beecham Group Limited: *See*—
Rogers, Norman H.; and O'Hanlon, Peter J., 4,226,880, Cl. 424-283.000.
Beezhold, F. Lee: *See*—
Sheldon, Dwight M., III; and Beezhold, F. Lee, 4,226,179, Cl. 99-475.000.
Behringer, Donald F.: *See*—
Fancy, Thomas A.; and Behringer, Donald F., 4,227,072, Cl. 235-92.0CA.
Bekbulatov, Ildgam A.: *See*—
Varlamov, Gennady D.; Bekbulatov, Ildgam A.; Madaliev, Shavkat; Mamatov, Juldash; Proshkina, Alexandra V.; and Ubiennykh, Svetlana N., 4,226,968, Cl. 528-91.000.
Belansky, Rudolph J.: *See*—
Porter, Troy L.; and Belansky, Rudolph J., 4,226,136, Cl. 74-416.000.
Belcher, Robert A.; and Ahumada, Gregg D., to Belcher, Robert A. Distress/hazard signal flasher. 4,227,174, Cl. 340-81.00R.
Bell & Howell Company: *See*—
Stocker, Lester H., 4,226,324, Cl. 198-405.000.
Bell Telephone Laboratories, Incorporated: *See*—
Deo, Subhash R.; and Faudskar, Chester C., 4,226,492, Cl. 339-17.0CF.
Ebert, Harry K., Jr., 4,227,154, Cl. 328-141.000.
Gilmer, John L., 4,227,054, Cl. 179-16.0EA.
Goodwin, Charles A.; and Ota, Yusuke, 4,226,648, Cl. 148-175.000.
Griffith, Gary L.; and Sharma, Nawal K., 4,226,659, Cl. 156-305.000.
Hanson, Robert L., 4,227,055, Cl. 179-84.0VF.
Logan, Raiph A., 4,226,667, Cl. 156-656.000.
Lueddecke, Donald E.; Mottine, John J., Jr.; and Vesperman, William C., 4,227,042, Cl. 174-120.0SR.
Maydan, Dan; and Shepp, Lawrence A., 4,227,088, Cl. 250-445.00T.
Miller, Gabriel L., 4,227,147, Cl. 324-72.000.
Mogab, Cyril J., 4,226,665, Cl. 156-643.000.
Wyner, Aaron D., 4,227,250, Cl. 375-37.000.
Belli, John A. Flying saucer simulation game. 4,226,422, Cl. 273-368.000.
Bellinger, Pitts N. Outer corner edge holder. 4,226,395, Cl. 248-263.000.
Bellino, Robert A., to Akzona Incorporated. Protection of optical fibers. 4,226,504, Cl. 350-96.230.
Beneventano, Thomas: *See*—
Lang, Charles W.; and Beneventano, Thomas, 4,227,144, Cl. 323-121.000.
Benjamin, Diana M.: *See*—
Benjamin, Irving; and Benjamin, Diana M., 4,226,034, Cl. 37-12.000.
Benjamin, Irving; and Benjamin, Diana M. Vacuum snow remover for removing snow from roads and other snow covered surfaces. 4,226,034, Cl. 37-12.000.
Bennett, Robert B., to Dow Chemical Company, The. Method for the preparation of low temperature structure. 4,226,071, Cl. 52-741.000.
Bennett, Robert M., Jr., to Medtronic, Inc. System for detecting heart pacemaker pulses. 4,226,245, Cl. 128-419.0PT.
Bentley, Floyd C.: *See*—
Woolfson, Martin G.; and Bentley, Floyd C., 4,227,212, Cl. 358-126.000.
Beranek, Jaroslav; Pihert, Dobromil; and Engel, Oleg, to Ceskoslovenska akademie ved. Fluidized-bed seal. 4,226,835, Cl. 422-310.000.
Berber, Viktor A.; Pervushin, Evgeny S.; Murtazin, Khafiz M.; and Kholin, Vladimir G. Device for granulometric analysis of particles in fluids. 4,226,532, Cl. 356-336.000.
Berg, Rolf, to Assi Can Aktiebolag. Method and apparatus for joining a sealing element to a cylindrical container sleeve. 4,226,652, Cl. 156-69.000.
Bergner, Robert L.: *See*—
Rothwarf, Frederick; Bergner, Robert L.; Leupold, Herbert A.; and Tauber, Arthur, 4,226,620, Cl. 75-134.00C.
Berkowitz, Philip T.: *See*—
Baum, Kurt; and Berkowitz, Philip T., 4,226,777, Cl. 260-333.000.
Bernauer, Otto, to Daimler-Benz Aktiengesellschaft. Internal combustion engine. 4,226,213, Cl. 123-1.00A.
Bernier, Richard G.: *See*—
McIntosh, Robert A., Sr.; Bernier, Richard G.; and Estabrooks, David A., 4,226,410, Cl. 270-61.00F.
Berol Kemi AB: *See*—
Reinhardt, Hans; and Ottertun, Harald D., 4,226,791, Cl. 260-429.00R.
Bertholdt, Horst-Otto, to Kraftwerk Union Aktiengesellschaft. Method for the chemical decontamination of nuclear reactor components. 4,226,640, Cl. 134-3.000.
Bertolini, William A. Vehicle sidewall and roof construction. 4,226,189, Cl. 105-423.000.
Beta Aluminium Products Limited: *See*—
Thompson, Norman, 4,226,051, Cl. 49-403.000.
Bethke, Stanislaw: *See*—
Kapolyi, Laszlo; Szentgyorgyi, Geza; Vamos, Gyorgy; Grzymek, Jerzy; Grzymek, Anna D.; Bethke, Stanislaw; and Werynski, Bronislaw, 4,226,632, Cl. 106-100.000.
Bethlehem Steel Corporation: *See*—
Reinbold, Richard J., 4,226,407, Cl. 266-226.000.
Beuler, Helmut: *See*—
Mende, Hanns; Beuler, Helmut; and Glaum, Rolf, 4,226,678, Cl. 202-161.000.
Bevelander, Gerrit: *See*—
Lockwood, George S.; Shultz, Fred T.; and Bevelander, Gerrit, 4,226,210, Cl. 119-4.000.
Bewert, Wolfgang; and Littmann, Wolfgang, to BASF Aktiengesellschaft. α-Aminomethylene-β-formylaminopropionitrile and its manufacture. 4,226,799, Cl. 260-465.00E.
Bianco, Carlo, to Fameccanica S.p.A. Disposable diaper. 4,226,238, Cl. 128-287.000.
BICC Limited: *See*—
Bonikowski, Zbigniew; Ghanashyamkulkarni, Suhas; and Briant, Anthony A., 4,227,145, Cl. 324-51.000.
Bieber, Theo; Schuster, Friedrich; Paul, Gunther; Schmitt, Gunther; and Schmucker, Wolfgang, to Kugelfischer Georg Schafer & Co. Loading device for false-twist apparatus. 4,226,080, Cl. 57-339.000.
Bieker, Ron D., to Miller W. Corporation. Track-laying vehicle with improved suspension. 4,226,293, Cl. 180-9.500.
Biermann, Peter; and Schmidt, Manfred, to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH. Ski holding apparatus. 4,226,351, Cl. 224-325.000.
Bies, Sylvester W., to Stanley Works, The. Saw guide subassembly for mitre box. 4,226,152, Cl. 83-764.000.
Binstock, Morton H.; Lehmer, Robert C.; Johnson, Steven J.; Topolosky, John J.; and Smith, Thomas E., to Westinghouse Electric Corp. Automatic restart control for a power plant boiler. 4,226,086, Cl. 60-656.000.
Bird & Son, Inc.: *See*—
Hinds, Caryl E., 4,226,069, Cl. 52-521.000.
Birx, Daniel L., to United States of America, Navy. Pulse generator utilizing superconducting apparatus. 4,227,153, Cl. 328-59.000.
Bishop, Peter. Static neutralizer. 4,227,235, Cl. 361-230.000.
Bjorhaag, Georg, to Svensk Hardbetongteknik AB. Method of and apparatus for forming an article from a mixture of a solidifying plastic material and a large portion of filler material. 4,226,820, Cl. 264-72.000.
Black, Melvin L.; and Bowen, Robert C., to Weigh-Tech, Inc. Cement slurry reclamation system and method. 4,226,542, Cl. 366-17.000.
Blaskovic, Silvio U.; and Cornell, Robert W., to International Business Machines Corporation. Forms feed tractor. 4,226,353, Cl. 226-74.000.
Blaszczak, Larry C.: *See*—
Hatfield, Lowell D.; Blaszczak, Larry C.; and Fisher, Jack W., 4,226,986, Cl. 544-16.000.
Blaupunkt-Werke GmbH: *See*—
Rubi, Horst, 4,226,386, Cl. 242-192.000.
Blavat Advertizing, Inc.: *See*—
Rice, William H., 4,226,347, Cl. 224-35.000.
Blendax-Werke - R. Schneider GmbH & Co.: *See*—
Stoltz, Werner, 4,225,994, Cl. 15-22.00R.
Blodgett, Norman S.: *See*—
Mattress, Albert, Jr., 4,226,102, Cl. 70-164.000.
Blom, Hendrik, to U.S. Philips Corporation. Gamma correction circuit for television. 4,227,216, Cl. 358-164.000.
Blount, David H. Process to break down cellulose polymers and produce cellular solid or solid reaction products. 4,226,982, Cl. 536-101.000.
Bocharov, Jury N.: *See*—
Zeinalov, Bagadur K.; Aliev, Vagab S.; Akhundov, Arif A.; Bocharov, Jury N.; Lugovskoi, Vladimir D.; and Miramanian, Akop A., 4,227,020, Cl. 562-511.000.
Bockemuehl, Johannes: *See*—
Kremer, Walter, 4,226,528, Cl. 355-74.000.
Bockrath, Ronald E.: *See*—
Malo, Russell V.; Gustafson, Gary A.; and Bockrath, Ronald E., 4,226,973, Cl. 528-481.000.
Bode, Howard E., Sr.; and Williams, James B. Mat or rug cleaning process using roller brush. 4,226,641, Cl. 134-9.000.
Bogen, Erik T.: *See*—
Lund, Svend A.; Iversen, Sven E.; Petersen, Carl E. T.; Bogen, Erik T.; and Dam, Jorgen, 4,226,122, Cl. 73-609.000.
Bogomolov, Valentin G.: *See*—
Anfilov, Igor V.; Abramov, Jury V.; Ershov, Geny S.; Bogomolov, Valentin G.; Kaidoshko, Eduard A.; Remizov, Jury B.; Rozhenko, Anatoly L.; and Suvorov, Gennady P., 4,226,514, Cl. 354-7.000.
Boguslaski, Robert C.; Carrico, Robert J.; and Burd, John F., to Miles Laboratories, Inc. β-Galactosyl-umbelliferone-labeled aminoglycoside antibiotics and intermediates in their preparation. 4,226,978, Cl. 536-4.000.
Bohner, Beat; and Rohr, Otto, to Ciba-Geigy Corporation. Cyanomethyl ester of 4-(p-trifluoromethylphenoxy)-α-phenoxypropionic acid and a method of controlling weeds therewith. 4,226,614, Cl. 71-105.000.
Bohringer, Walter, to RCA Corporation. Regulated deflection system. 4,227,125, Cl. 315-411.000.
Boivin, Joseph R. G., to Consolidated-Bathurst Limited. Centrifugal cleaner. 4,226,707, Cl. 209-211.000.
Bolhofer, William A.; and Prugh, John D., to Merck & Co., Inc. Heterocyclic carbamates. 4,226,871, Cl. 424-263.000.
Bolkow Gesellschaft mit beschrankter Haftung: *See*—
Hermann, Joachim, 4,227,076, Cl. 250-203.00R.
Bolton, Joseph A.; and Huhtala, Olavi A., to Albany International Corp. Fabric washing system. 4,225,991, Cl. 8-151.000.
Bonikowski, Zbigniew; Ghanashyamkulkarni, Suhas; and Briant, Anthony A., to BICC Limited. Apparatus for detecting faults in electric cables. 4,227,145, Cl. 324-51.000.

Bonnella Switches Limited: *See*—
Ayres, Frederick C.; and Little, Philip V., 4,227,060, Cl. 200-296.000.

Booth, David, to Firth Carpets Limited. Tufting machines. 4,226,196, Cl. 112-79.00R.

Booth, Inc.: *See*—
Booth, Jack J.; Branch, William C.; and Kidd, Robert P., 4,226,344, Cl. 222-504.000.

Booth, Jack J.; Branch, William C.; and Kidd, Robert P., to Booth, Inc. Constant flow valve actuator. 4,226,344, Cl. 222-504.000.

Booth, Robert E.; Evans, Francis E.; Eibeck, Richard E.; and Robinson, Martin A., to Allied Chemical Corporation. Recyclable boron trifluoride catalyst and method of using same. 4,227,027, Cl. 585-465.000.

Borel, Robert J.: *See*—
Meldahl, Robert D.; and Borel, Robert J., 4,226,313, Cl. 192-18.00R.

Borg-Warner Corporation: *See*—
Siliberschlag, Russel E., 4,226,309, Cl. 192-3.310.

Bornmann, Hans: *See*—
Linden, Heinrich; Heidrich, Jochen; Wegemund, Bernd; and Bornmann, Hans, 4,226,637, Cl. 106-308.00Q.

Boros, Jozsef; Csillag, Zsolt; Ferenczi, Tibor; Kalman, Tibor; Lengyel, Laszlo; Matyasi, Jozsef; Orban, Ferenc; Solymar, Karoly; Toth, Bela; Toth, Lajos; Voros, Istan; Wentzely, Kalman; Zambo, Janos; and Zoldi, Jozsef, to Almasfuzitoi Timfoldgyar. Process for accelerating the digestion and sedimentation steps on the Bayer alumina process. 4,226,838, Cl. 423-121.000.

Botts, Thomas E.; and Powell, James R., to United States of America, Energy. Means and method for the destruction of particles entrained in a gas stream. 4,226,369, Cl. 241-1.000.

Boudreau, Robert J., to Hedstrom Co. Foldable cantilevered playseat. 4,226,467, Cl. 297-5.000.

Bourdeau, Romeo G.: *See*—
Cox, Arthur R.; Bourdeau, Romeo G.; and Holiday, Paul R., 4,226,644, Cl. 148-2.000.

Bourne, Henry A., Jr.; and Salama, Mamdouh, to Conoco, Inc. Mooring system for tension leg platform. 4,226,555, Cl. 405-224.000.

Bourrin, Gilbert, to Cestidur. Antifriction materials. 4,226,762, Cl. 260-42.460.

Bouton, Richard A.: *See*—
Park, Chung P.; and Bouton, Richard A., 4,226,946, Cl. 521-98.000.

Bowen, Robert C.: *See*—
Black, Melvin L.; and Bowen, Robert C., 4,226,542, Cl. 366-17.000.

Bower, Lewis R. B.; Dudley, Philip W.; and Smith, John C., to Fletcher Sutcliffe Wild Limited. Control system. 4,226,558, Cl. 405-302.000.

Bowers, Michael J., to Newell Companies, Inc. Universal shade bracket. 4,226,396, Cl. 248-268.000.

Bowman, Edward B., to Du Pont de Nemours, E. I., and Company. Purge gas in methanol synthesis. 4,226,795, Cl. 210-449.500.

Boyer, Ronald G.; and Olt, Arthur E., Jr., to Caterpillar Tractor Co. Wire routing channel. 4,227,239, Cl. 361-422.000.

Brachthauser, Kunibert; and Herchenbach, Horst, to Klockner-Humboldt-Wedag AG. Method and apparatus for the thermal treatment of fine-grained material with hot gases. 4,226,586, Cl. 432-106.000.

Bracke, William J. I.; and Brandli, Jacqueline, to Labofina S.A. Polymerization process. 4,226,955, Cl. 525-316.000.

Bradshaw, Franklin C.; Connoy, Thomas P.; and Paque, Michael W., to Kroy Industries Inc. Printing cartridge. 4,226,547, Cl. 400-613.000.

Branch, William C.: *See*—
Booth, Jack J.; Branch, William C.; and Kidd, Robert P., 4,226,344, Cl. 222-504.000.

Brandenburg, Klaus; Richter, Hermann; and Weber, Wendelin, to U.S. Philips Corporation. Electromagnetic drive for recording pins in a matrix printer. 4,226,545, Cl. 400-124.000.

Brandli, Jacqueline: *See*—
Bracke, William J. I.; and Brandli, Jacqueline, 4,226,955, Cl. 525-316.000.

Braun Aktiengesellschaft: *See*—
Bauer, Alfred, 4,227,254, Cl. 455-154.000.

Braun, Martin: *See*—
Waugh, John S.; and Braun, Martin, 4,227,112, Cl. 313-41.000.

Braun, Valerie D.: *See*—
Bush, William G.; and Braun, Valerie D., 4,226,736, Cl. 252-135.000.

Bray, William E., to Texas Instruments Incorporated. Switch mode driver. 4,227,230, Cl. 361-152.000.

Bressler, Terry L. Device for pleating draperies. 4,226,276, Cl. 160-348.000.

Breston, Michael P.: *See*—
Zens, Rene J. L., 4,226,404, Cl. 254-359.000.

Briant, Anthony A.: *See*—
Bonikowski, Zbigniew; Ghanashyamkulkarni, Suhas; and Briant, Anthony A., 4,227,145, Cl. 324-51.000.

Bridgeford, Douglas J., to Teepak, Inc. Elastic amylose polymers. 4,226,264, Cl. 738-118.100.

Bridgestone Tire Company Limited: *See*—
Yukuta, Toshio; Fukuda, Hiroya; Ishii, Seiji; and Utsumi, Kazuo, 4,226,947, Cl. 521-107.000.

Brigante, Miguel F. Unitary package for water treatment for attachment to home hot water heater. 4,226,720, Cl. 210-222.000.

Brittain, William J., to Ford Motor Company. Peripheral station in an information handling system. 4,227,181, Cl. 340-167.00R.

Britton, John, to General Electric Company Limited, The. Circuits for operating electric discharge lamps. 4,227,118, Cl. 315-101.000.

Brockway Glass Company, Inc.: *See*—
Joseph, James R., 4,227,029, Cl. 13-6.000.

Brooks, Steven W., to Spin Physics, Inc. Apparatus for detecting the speed of an electric motor. 4,227,129, Cl. 318-331.000.

Broom, Gilbert R. Method and device for indicating headlight alignment. 4,226,530, Cl. 356-121.000.

Broom, Henry T., to Nalco Chemical Company. Method for inhibiting fouling of petrochemical processing equipment. 4,226,700, Cl. 208-48.0AA.

Brouwer, Charles W.; and Valois, Rene J., to Leesona Corporation. Loom storage feeder improvement. 4,226,379, Cl. 242-47.010.

Brower, Van Pelt; Esposito, Robert A.; and Soar, Thomas E., to Monsanto Company. Production of polyvinylbutyral sheet rolls. 4,226,818, Cl. 264-40.100.

Brown, Cicero C., deceased (by Brown, Joe R., executor), to Brown Oil Tools, Inc. Swivel apparatus. 4,226,447, Cl. 285-316.000.

Brown, Dale M.; Garfinkel, Marvin; and Laurent, John A., to General Electric Company. Solid state relay. 4,227,098, Cl. 307-311.000.

Brown, Edward M.: *See*—
Towns, Edward J.; and Brown, Edward M., 4,226,341, Cl. 222-440.000.

Brown, Hill; and Pippin, Jack M. Tape recording system. 4,227,220, Cl. 360-15.000.

Brown, Joe R., executor: *See*—
Brown, Cicero C., deceased, 4,226,447, Cl. 285-316.000.

Brown, Larry L.: *See*—
Williams, Ralph E.; Brown, Larry L.; Marchese, Robert P.; Russell, Philip A.; and Armstrong, James A., 4,226,115, Cl. 73-28.000.

Brown Oil Tools, Inc.: *See*—
Brown, Cicero C., deceased, 4,226,447, Cl. 285-316.000.

Brown, Raymond C., to Superior Industries International, Inc. Wire spoke wheel. 4,226,478, Cl. 301-37.0SS.

Brown, Thomas H., to Smith Kline & French Laboratories Limited. Intermediates in the process for making histamine antagonists. 4,227,000, Cl. 544-321.000.

Brown, William T. Multi-month calendar. 4,226,443, Cl. 283-2.000.

Broyles, Harry C., to Raychem Corporation. Heat-recoverable metallic couplings. 4,226,448, Cl. 285-381.000.

Bruce Plastics, Inc.: *See*—
Szabo, Bela G., 4,226,345, Cl. 223-91.000.

Bruckenstein, Stanley, to Andco Industries, Inc. Process for purifying water containing fluoride ion. 4,226,710, Cl. 210-714.000.

Brunsch, Klaus: *See*—
Schulz, Ralf-Thilo; Brunsch, Klaus; and Woerndle, Rudolf, 4,226,916, Cl. 428-542.000.

BRV "Electronna Obrabotka na Materialite": *See*—
Antonov, Bogomil T.; Panayotov, Stoyan Y.; and Lyutakov, Ognyan V., 4,226,697, Cl. 204-298.000.

Bryson, Charles E., III: *See*—
Dukes, John N.; Bryson, Charles E., III; and Weber, Lynn, 4,227,079, Cl. 250-231.0SE.

Bucken, Hans J.; and Horskorte, Helmut, to Henkel Kommanditgesellschaft auf Aktien. Rubber compositions expansible under vulcanization conditions. 4,226,945, Cl. 521-92.000.

Buckler, Robert T.; and Schroeder, Hartmut R., to Miles Laboratories, Inc. Amino-functionalized naphthalene-1,2-dicarboxylic acid hydrozides. 4,226,992, Cl. 544-234.000.

Buckler, Robert T.; and Schroeder, Hartmut R., to Miles Laboratories, Inc. Amino-functionalized phthalhydrazides. 4,226,993, Cl. 544-237.000.

Budzich, Tadeusz. Load responsive control valve. 4,226,262, Cl. 137-596.130.

Bugaut, Andree: *See*—
Kalopissis, Gregoire; and Bugaut, Andree, 4,226,784, Cl. 260-378.000.

Bulwidas, Jr., John J. Hand-operated remote control unit and mounting structure for an arc welding machine. 4,227,066, Cl. 219-132.000.

Bunker Ramo Corporation: *See*—
Bauerle, Gerhard, 4,226,499, Cl. 339-258.00R.

Bunyan, Thomas W., to Pilgrim Engineering Developments Limited. Pipe joints. 4,226,444, Cl. 285-21.000.

Burch, JoEllen: *See*—
Thomson, Ian W.; Limbaugh, Charles D.; and Burch, JoEllen, 4,227,049, Cl. 179-1.00M.

Burd, John F.: *See*—
Boguslaski, Robert C.; Carrico, Robert J.; and Burd, John F., 4,226,978, Cl. 536-4.000.

Burkall, Alvin E.: *See*—
Deming, Charles P.; Rybarczyk, Norbert J., Jr.; and Burkall, Alvin E., 4,226,026, Cl. 34-31.000.

Burkard, Willy; and Wyss, Pierre-Charles, to Hoffmann-La Roche Inc. Method of treating depression. 4,226,865, Cl. 424-248.500.

Burrington, George C., to Dana Corporation. Hose coupling. 4,226,446, Cl. 285-256.000.

Burroughs Wellcome Co.: *See*—
Copp, Frederick C.; Roberts, Peter T.; Frenkel, Alexander D.; and Collard, David, 4,226,876, Cl. 424-273.00R.

Busch, Peter: *See*—
Rose, David; Lieske, Edgar; and Busch, Peter, 4,226,595, Cl. 8-406.000.

Buser, Hansueli, to Ciba-Geigy Corporation. Sample introduction system. 4,226,119, Cl. 73-422.0GC.

Bush, John R., to B. F. Goodrich Company, The. Method for building a tire. 4,226,655, Cl. 156-132.000.

Bush, William G.; and Braun, Valerie D., to Drackett Company, The. Dishwashing detergent gel composition. 4,226,736, Cl. 252-135.000.

Butler, James R.; Turner, James E.; and Goodhart, Frank W., to Warner-Lambert Company. Removal of heparin from heparin-containing blood plasma samples using a triethylaminoethyl cellulose tablet. 4,226,599, Cl. 23-230.00B.

Butler, Robert W. Rupture lines in flexible packages. 4,226,330, Cl. 206-620.000.

Buzzi, Ugo, to Albe SA. Device for edging the points of ball pens in particular those made of hard material. 4,226,107, Cl. 72-121.000.

B.V. Machinefabriek en Ijzergieterij Holland-: *See*—
Baas, Hendrik B., 4,226,721, Cl. 210-225.000.

B.V. Neratoom: *See*—
Essebaggers, Jan, 4,226,012, Cl. 29-157.30R.

Cable Caddy, Inc.: *See*—
Douglas, Homer C., 4,226,383, Cl. 242-77.000.

Cabooiture Co-Operative Associates Limited: *See*—
Siecker, Cornelis, 4,226,888, Cl. 426-36.000.

Cain, Huey A.; and Meneghetti, Leno M. Oil spill recovery method and apparatus. 4,226,711, Cl. 210-691.000.

Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., to Ford Motor Company. Terminal block with fuse guards and identification surface. 4,226,493, Cl. 339-66.00M.

Cale, Albert D., Jr., to A. H. Robins Company, Inc. N-Lower-alkyl 3-phenoxy-1-azetidinecarboxamides. 4,226,861, Cl. 424-244.000.

California Institute of Technology: *See*—
Collins, Earl R., Jr., 4,226,288, Cl. 175-62.000.

Calkins, George B.: *See*—
Sarnoff, Stanley J.; Calkins, George B.; and Dalling, N. Lawrence, 4,226,235, Cl. 128-218.00F.

Callanan, Robert F. Basketball practice assembly. 4,226,416, Cl. 273-1.50A.

Cambria Spring Company: *See*—
Lampert, Albert J., 4,226,441, Cl. 280-718.000.

Cameron, Donald J.: *See*—
Schulson, Erland M.; and Cameron, Donald J., 4,226,647, Cl. 148-32.500.

Cameron, Wallace C., to Copper Alloys Corp. Reduction mill. 4,226,375, Cl. 241-88.400.

Camilleri, Thomas M. Carpet belt. 4,226,417, Cl. 273-43.00R.

Campagnuolo, Carl J.; Scheinine, Leon; and Mayercik, Paul M., to United States of America, Army. Hand cranked electrical power source. 4,227,092, Cl. 290-1.00C.

Campbell Soup Company: *See*—
Hildebolt, William M., 4,226,576, Cl. 425-69.000.

Canada, Atomic Energy of, Limited: *See*—
Schulson, Erland M.; and Cameron, Donald J., 4,226,647, Cl. 148-32.500.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Armstrong, William A., 4,226,920, Cl. 429-94.000.

Canada Permanent Trust Co., co-executor: *See*—
Cochrane, Ian W.; Tucker, Frederick R., deceased; Tucker, Mary, co-executrix; Ackerman, George, co-executor; and Canada Permanent Trust Co., co-executor, 4,225,982, Cl. 3-7.000.

Cannon, William N.: *See*—
Eizember, Richard F.; Vogler, Kathleen R.; and Cannon, William N., 4,226,789, Cl. 260-397.70R.

Canon Kabushiki Kaisha: *See*—
Hashimoto, Shigeru; Masuda, Akira; Mochizuki, Katura; Satoh, Akira; Takeuchi, Koshi; and Oda, Teruhisa, 4,226,505, Cl. 350-252.000.
Minoura, Kazuo; and Tateoka, Masamichi, 4,226,500, Cl. 350-6.100.
Nishida, Keijiro; Kakei, Mitsuo; Kamiya, Osamu; and Sekimura, Nobuyuki, 4,226,208, Cl. 118-706.000.
Tsunekawa, Tokuichi, 4,226,516, Cl. 354-60.00E.
Yamamoto, Hironori, 4,226,483, Cl. 308-9.000.

Caplar, Vesna: *See*—
Kajfez, Franjo; Sunjic, Vitomir; and Caplar, Vesna, 4,226,766, Cl. 260-239.0BD.

Capoccia, Anastascio. Device for removing the earth generated by tunneling. 4,226,477, Cl. 299-56.000.

Caputo, Anthony J.; Costanzo, Dante A.; Lackey, Walter J., Jr.; Layton, Frank L.; and Stinton, David P., to United States of America, Energy. Method of evaluating the integrity of the outer carbon layer of triso-coated reactor fuel particles. 4,227,081, Cl. 250-321.000.

Carba Societe Anonyme: *See*—
Fragnet, Jean, 4,226,246, Cl. 128-420.00R.

Carlson, David E., to RCA Corporation. Method of enhancing the electronic properties of an undoped and/or N-type hydrogenated amorphous silicon film. 4,226,643, Cl. 136-89.0TF.

Carlson, David W.: *See*—
Halasa, Adel F.; Carlson, David W.; and Hall, James E., 4,226,952, Cl. 525-192.000.

Carlson, Gene D.; and Ehrhardt, Gerry H., to Frye Copysystems, Inc. Water insensitive image receptor coating. 4,226,442, Cl. 282-27.500.

Carlson, Robert F., to Stretch Wrap, Inc. Package supporting assembly means. 4,226,397, Cl. 248-274.000.

Carlson, Robert K.; and Ferritto, James J., to Union Oil Company of California. Manufacture of high density, high strength isotropic graphite. 4,226,900, Cl. 427-228.000.

Carlson, Russell L.; Eastin, David L.; Loehning, Ralph H.; and Stalker, William E., to Morgan Adhesives Company. Method of making retroreflective laminate. 4,226,658, Cl. 156-247.000.

Carr, Keith E.; and Symons, John J., to Whirlpool Corporation. Ice body dispenser. 4,226,269, Cl. 141-361.000.

Carr, Nathaniel, to United States of America, Army. Method of removing a track pin from a track shoe. 4,226,016, Cl. 29-426.400.

Carrick, Robert L.; Manning, William T.; and Grimes, Robert E., to Telcom, Inc. Signal classifier. 4,227,255, Cl. 455-226.000.

Carrico, Robert J.: *See*—
Boguslaski, Robert C.; Carrico, Robert J.; and Burd, John F., 4,226,978, Cl. 536-4.000.

Carroll, Alf L., Jr.: *See*—
Ezekiel, Frederick D.; and Carroll, Alf L., Jr., 4,227,100, Cl. 310-13.000.

Carroll, John L.: *See*—
Carroll, Michael A.; and Carroll, John L., 4,226,040, Cl. 40-610.000.

Carroll, Michael A.; and Carroll, John L., to R & J Sign Company, Inc. Folding scaffold sign. 4,226,040, Cl. 40-610.000.

Carter, Alton L. Split threaded coupling nut. 4,226,164, Cl. 85-33.000.

Carter, Brian, to Societe PRL. Convector heater. 4,227,068, Cl. 219-366.000.

Carter, Sidney T., to A-T-O Inc. Doctor blade for labeling machine. 4,226,660, Cl. 156-357.000.

Cary, George R.; and Pfisterer, Noelie B. Ortho-turn bed. 4,225,988, Cl. 5-61.000.

Cassata, Antonio: *See*—
Giannini, Umberto; Cassata, Antonio; Longi, Paolo; and Mazzocchi, Romano, 4,226,963, Cl. 526-114.000.

Castel, Jean: *See*—
Orzalesi, Henri; and Castel, Jean, 4,226,885, Cl. 424-303.000.

Caterpillar Tractor Co.: *See*—
Boyer, Ronald G.; and Olt, Arthur E., Jr., 4,227,239, Cl. 361-422.000.

Cavallaro, Antonino: *See*—
Cazzaro, Giorgio; Malgeri, Domenico; Matera, Giancarlo; and Cavallaro, Antonino, 4,226,824, Cl. 264-182.000.

Cavil, David T.; and McAuliffe, Gerald N., to Outboard Marine Corporation. Thyristor interlock and indicator light circuit for electric vehicles. 4,227,132, Cl. 318-549.000.

Cazzaro, Giorgio; Malgeri, Domenico; Matera, Giancarlo; and Cavallaro, Antonino, to Societa Nazionale Industria Applicazioni Viscosa S.p.A. Process for spinning modacrylic fiber having high retraction and reduced inflammability. 4,226,824, Cl. 264-182.000.

CBS Inc.: *See*—
Rossi, John P., 4,227,204, Cl. 358-13.000.

Celanese Corporation: *See*—
Barer, Sol J., 4,226,881, Cl. 424-285.000.

Central Glass Company, Limited: *See*—
Tabuchi, Heizi; and Itoh, Toshiaki, 4,226,629, Cl. 106-65.000.

Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie: *See*—
Economopoulos, Mario; and Respen, Jean Y., 4,226,106, Cl. 72-39.000.
Wilmotte, Stephan H.; Nautet, Jean A.; and Economopoulos, Marios, 4,226,108, Cl. 72-201.000.

Centre Electronique Horloger, S.A.: *See*—
Piguet, Christian, 4,227,097, Cl. 307-279.000.

Centronics Data Computer Corporation: *See*—
McIntosh, Robert A., Sr.; Bernier, Richard G.; and Estabrooks, David A., 4,226,410, Cl. 270-61.00F.

Century Mfg. Co.: *See*—
Smith, Leonard S., 4,227,148, Cl. 324-115.000.

Ceskoslovenska akademie ved: *See*—
Beranek, Jaroslav; Pihert, Dobromil; and Engel, Oleg, 4,226,835, Cl. 422-310.000.

Cestidur: *See*—
Bourrin, Gilbert, 4,226,762, Cl. 260-42.460.

Champion International Corporation: *See*—
Fremont, Henry A., 4,226,673, Cl. 162-29.000.

Chang, Chu-Cheng: *See*—
United States of America, National Aeronautics and Space Administration; Holdeman, Louis B.; Toots, Jaan; and Chang, Chu-Cheng, 4,227,096, Cl. 307-233.00R.

Chantler, Fredrick J.: *See*—
Chappell, Thurman P.; and Chantler, Fredrick J., 4,226,440, Cl. 280-660.000.

Chapman, Brian N.: *See*—
Winters, Harold F.; and Chapman, Brian N., 4,226,666, Cl. 156-643.000.

Chappell, Thurman P.; and Chantler, Fredrick J. Adapter device for lowering the front end of a vehicle. 4,226,440, Cl. 280-660.000.

Charles Stark Draper Laboratory, Inc., The: *See*—
Warner, David A., 4,227,209, Cl. 358-94.000.

Chatterjee, Pallab K.: *See*—
Tasch, Al F., Jr.; and Chatterjee, Pallab K., 4,227,202, Cl. 357-24.000.

Chelcun, Darrell; and Dressel, Lawrence J., to Honeywell Inc. Data processing protocol system. 4,227,045, Cl. 178-66.100.

Chemetron Corporation: *See*—
Kumzi, Theodore B., 4,226,147, Cl. 83-37.000.

Chemie Linz Aktiengesellschaft: *See*—
Lunzer, Friedrich; and Kepplinger, Werner, 4,226,842, Cl. 423-465.000.

Chen, Jen-Hung: *See*—
Chen, Jen-Sheng; and Chen, Jen-Hung, 4,226,022, Cl. 33-30.00G.

Chen, Jen-Sheng; and Chen, Jen-Hung. Ellipsograph. 4,226,022, Cl. 33-30.00G.

Chen, Sow-Mei L.; and Grudzinskas, Charles V., to American Cyanamid Company. 15-Deoxy-16-hydroxy-16-chloromethyl or bromo-

methyl prostaglandins of the E and F series. 4,227,011, Cl. 560-121.000.
Chenel, Pierre, to Saint-Gobain Industries. Hermetic seals in multiple pane windows. 4,226,063, Cl. 52-172.000.
Cheng, Paul S. Y., to Sadacca, Albert V.; and Cheng, Paul S. Y. Miniature socketed fuse for a decorative string of series-connected miniature incandescent lamps. 4,227,228, Cl. 361-104.000.
Cheng, William J.; and Guthrie, David B., to Petrolite Corporation. Magnesium-containing dispersions by decomposition of $MgCO_3$. 4,226,739, Cl. 252-389.00R.
Cherednichenko, Vladimir S.: *See—*
Frolov, Jury F.; Piljukov, Jury F.; Cherednichenko, Vladimir S.; Orlov, Gennady I.; Kurapin, Igor N.; Shabalina, Roza I.; Lakernik, Mark M.; Gavrilenko, Alexandr F.; Yakovenko, Anatoly A.; Elkina, Alla K.; Golovachev, Anatoly I.; Egorova, Tatyana S.; Vlasov, Jury M.; Smelyansky, Matvei Y., deceased; and Zelichenko, Faina S., administator, 4,226,406, Cl. 266-148.000.
Chester, John, to Ferodo Limited. Friction materials. 4,226,759, Cl. 260-38.000.
Chevron Research Company: *See—*
Feffer, Philip C., 4,226,010, Cl. 28-248.000.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See—*
Feuer, Laszlo, 4,226,884, Cl. 424-303.000.
Chloride Group Limited: *See—*
Cross, Bryan, 4,227,141, Cl. 320-20.000.
Gurwicz, David; and Pacey, Keith, 4,227,243, Cl. 363-132.000.
Choay S.A.: *See—*
Orzalesi, Henri; and Castel, Jean, 4,226,885, Cl. 424-303.000.
Chorbov, Iliya G.: *See—*
Nikolov, Ivan D.; Minchev, Pavel M.; Dimitrov, Marin A.; Georgiev, Assen P.; and Chorbov, Iliya G., 4,227,033, Cl. 13-27.000.
Chore-Time Equipment, Inc.: *See—*
Barrentine, Earl, 4,226,211, Cl. 119-48.000.
Christensen, Burton G.; and Ratcliffe, Ronald W., to Merck & Co., Inc. Novel antibiotic analogues of cephalosporins. 4,226,866, Cl. 424-248.510.
Christensen, Burton G.; Hannah, John; Leanza, William J.; Ratcliffe, Ronald W.; and Shih, David H., to Merck & Co., Inc. O-, N- and carboxyl derivatives of thienamycin. 4,226,870, Cl. 424-263.000.
Christensen, Don C., to Phillips Petroleum Company. Venting of gases. 4,226,671, Cl. 159-47.00R.
Christensson, Od W. Method for manufacturing a lined container. 4,226,170, Cl. 93-36.010.
Christian, Alfred W., to Hydrotile Canada Limited. Pallet Positioner. 4,226,568, Cl. 414-589.000.
Christidis, Yani: *See—*
Herman, Emmanuel; Diery, Helmut; Soreau, Michel; and Christidis, Yani, 4,227,016, Cl. 562-465.000.
Christou, Aristos: *See—*
Davey, John E.; and Christou, Aristos, 4,226,649, Cl. 148-175.000.
Chu, Richard C., to International Business Machines Corporation. Thermal conduction module. 4,226,281, Cl. 165-80.00A.
Ciba-Geigy AG: *See—*
Batzer, Hans; Habermeier, Jurgen; and Porret, Daniel, 4,227,005, Cl. 548-312.000.
Webb, Terence C.; and Reeves, David L. R., 4,226,934, Cl. 430-443.000.
Ciba-Geigy Corporation: *See—*
Bohner, Beat; and Rohr, Otto, 4,226,614, Cl. 71-105.000.
Buser, Hansueli, 4,226,119, Cl. 73-422.0GC.
Dexter, Martin; and Winter, Roland A. E., 4,226,763, Cl. 260-45.80N.
Knecht, Eduard, 4,226,755, Cl. 260-31.4EP.
Malherbe, Roger; and Rasberger, Michael, 4,226,999, Cl. 546-222.000.
Rosen, Melvin H., 4,226,998, Cl. 546-202.000.
Cicon, Dennis E., to United Technologies Corporation. Acoustic treated exhaust plug for turbine engine. 4,226,297, Cl. 181-213.000.
Cincinnati Incorporated: *See—*
Littley, John J.; Koors, Carl W.; Fussner, Richard F.; and Lengel, Frank, 4,226,151, Cl. 83-479.000.
Citizen Watch Co., Ltd.: *See—*
Ebihara, Heihachiro; Sekiya, Fukuo; and Yamada, Takashi, 4,227,192, Cl. 340-765.000.
Ichikawa, Singo, 4,226,081, Cl. 368-66.000.
Clarion Co., Ltd.: *See—*
Umezawa, Hiroyuki; Ito, Yukio; Takai, Kazuki; and Okada, Hitoshi, 4,227,224, Cl. 360-96.500.
Clark Equipment Company: *See—*
Sturtz, Charles R., Jr.; and Joworski, Robert W., 4,226,270, Cl. 144-2.00Z.
Clark, Joseph H. Diesel fuel monitor system. 4,227,173, Cl. 340-59.000.
Clark, Raymond D., to Eastman Kodak Company. Preparation of arylene-bis-maleimides. 4,226,776, Cl. 260-326.260.
Clark, Ronald J.: *See—*
Corbett, Aubrey E.; Ho, Siu L.; and Clark, Ronald J., 4,225,989, Cl. 5-453.000.
Clayton, Richard W.: *See—*
Hayden, Percy; Clayton, Richard W.; and Cope, Alan F. G., 4,226,782, Cl. 260-348.340.
Clemar Manufacturing Corp.: *See—*
Szekely, Fred J.; and Ray, Charles A., 4,226,259, Cl. 137-269.000.
Clifford, William H.: *See—*
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CMI Corporation: *See—*
Trudeau, Curtis A., 4,226,437, Cl. 280-405.00R.
Coal Processing Equipment, Inc.: *See—*
McCartney, Walter T., 4,226,708, Cl. 209-211.000.
Coats & Clark, Inc.: *See—*
Einhorn, Ruediger, 4,226,394, Cl. 248-225.100.
Coburn, John W.; and Kay, Eric, to International Business Machines Corporation. Plasma method for forming a metal containing polymer. 4,226,896, Cl. 427-34.000.
Cochrane, Ian W.; Tucker, Frederick R., deceased; by Tucker, Mary, co-executrix; by Ackerman, George, co-executor; and by Canada Permanent Trust Co., co-executor. Molded syme foot with attached stump socket. 4,225,982, Cl. 3-7.000.
Cockman, Haggie I. Cooling apparatus. 4,226,815, Cl. 261-110.000.
Cockroft, James B.; and Ernster, Peter J., to Sunbeam Corporation. Speed responsive motor control circuit. 4,227,128, Cl. 318-325.000.
Codman & Shurtleff, Inc.: *See—*
Nardella, Paul C.; Feeney, Joseph D.; Wrublewski, Thomas A.; and Gonsalves, Anthony W., 4,227,140, Cl. 320-2.000.
Coelho, Chris M.: *See—*
Tiffany, Thomas O.; Manning, Gilbert B.; Thayer, Philip C.; and Coelho, Chris M., 4,226,531, Cl. 356-246.000.
Coffaro, Matthew; and Pelton, Ronald L. Weight exercise device. 4,226,414, Cl. 272-117.000.
Cohen, Morton; and Silverman, Elliott. Apparatus and method for applying dental veneer. 4,226,593, Cl. 433-217.000.
Cohen, Sasson; and Fisher, Abraham, to Purdue Frederick Company, The. Novel heterocyclic compounds and pharmaceutical composition containing them. 4,226,996, Cl. 546-89.000.
Colbert, William V.: *See—*
Degner, Vernon R.; and Colbert, William V., 4,226,706, Cl. 209-170.000.
Cole, Jack R., to University Patents, Inc. Preparation and use of bouvardin and deoxybouvardin. 4,226,856, Cl. 424-177.000.
Cole, Richard O., to American Machine & Hydraulics. Pipe clamp. 4,226,449, Cl. 285-382.200.
Coleman, John H., to Plasma Physics Corporation. Method of forming semiconducting materials and barriers. 4,226,897, Cl. 427-39.000.
Coleman, Thomas R. Drum debarker. 4,226,271, Cl. 144-208.00B.
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Johnston, Robert J.; Layciak, Stephen G.; and Colista, Dominic, 4,227,056, Cl. 200-44.000.
Johnston, Robert J.; Layciak, Stephen G.; and Colista, Dominic, 4,227,058, Cl. 200-153.00J.
Collard, David: *See—*
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Colley, Edward E. S., to Fisons Limited. Analytical centrifuge with improved signal/noise ratio. 4,226,537, Cl. 356-427.000.
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Collins, Earl R., Jr., to California Institute of Technology. Side hole drilling in boreholes. 4,226,288, Cl. 175-62.000.
Collins, Joseph C., to Sterling Drug Inc. Substituted phenylvinyl cyclopropyl ketones. 4,227,015, Cl. 562-459.000.
Collins, Walter L. Trailer hitch guide. 4,226,438, Cl. 280-477.000.
Columbia Photografix, Inc.: *See—*
Disbrow, Lynnford E., 4,227,211, Cl. 358-113.000.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Semur, Pierre; and Basset, Marcel, 4,227,094, Cl. 307-113.000.
Comsip Delphi, Inc.: *See—*
Lewis, Gary W.; and Robinson, Alfred D., 4,226,675, Cl. 176-19.00R.
Connoy, Thomas P.: *See—*
Bradshaw, Franklin C.; Connoy, Thomas P.; and Paque, Michael W., 4,226,547, Cl. 400-613.000.
Conoco, Inc.: *See—*
Bourne, Henry A., Jr.; and Salama, Mamdouh, 4,226,555, Cl. 405-224.000.
Leach, Bruce E., 4,227,024, Cl. 568-804.000.
Conrad, Edward G. Floating lash barge lifting device. 4,226,202, Cl. 114-48.000.
Consolidated-Bathurst Limited: *See—*
Boivin, Joseph R. G., 4,226,707, Cl. 209-211.000.
Cook, Glenn M.: *See—*
Portal, Charles; and Cook, Glenn M., 4,226,685, Cl. 204-105.00R.
Cooke, William E.; and Innes, Robert A., to Alcan Research and Development Limited. Process for electrolytic coloration of anodized aluminium. 4,226,680, Cl. 204-28.000.
Cooper, Glenn D.; Haaf, William R.; and Vaughn, Howard A., Jr., to General Electric Company. Polyphenylene ether resin compositions containing polysiloxane-modified alkenyl aromatic resins. 4,226,761, Cl. 260-42.180.
Cooper, Robin D. G.; Koppel, Gary A.; and McShane, Lawrence J., to Eli Lilly and Company. Intermediates for 3-aminoazetidin-2-ones. 4,226,767, Cl. 260-239.00A.
Cope, Alan F. G.: *See—*
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Copp, Frederick C.; Roberts, Peter T.; Frenkel, Alexander D.; and Collard, David, to Burroughs Wellcome Co. Arthropodicidal imidazoline derivatives. 4,226,876, Cl. 424-273.00R.
Copper Alloys Corp.: *See—*
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Copperweld Corporation: *See—*
Westfall, Lee R.; and Fraser, Malcolm J., 4,227,061, Cl. 219-9.500.

Coran, Aubert Y.; and Patel, Raman P., to Monsanto Company. Thermoplastic compositions of styrene-acrylonitrile resin and nitrile rubber. 4,226,953, Cl. 525-193.000.

Corbett, Aubrey E.; Ho, Siu L.; and Clark, Ronald J., to Glynwed Group Services Limited. Inflatable supports. 4,225,989, Cl. 5-453.000.

Corday, Dorothy L. Bingo game for the non-braille blind. 4,226,420, Cl. 273-269.000.

Cornelius, Larry R.: *See*—
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Cornell, Robert W.: *See*—
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Cotler, Catherine K.: *See*—
Mazzeo, Charles F.; and Cotler, Catherine K., 4,226,494, Cl. 339-103.00R.

Cottingham, James G., to United States of America, Energy. Method of making reflecting film reflector. 4,226,657, Cl. 156-196.000.

Coty, David. Particle collection system. 4,226,054, Cl. 51-270.000.

Coulombe, Eugene J.: *See*—
Paterson, Malcolm M.; Grubbs, Michael R.; Coulombe, Eugene J.; and Paxson, William J., 4,226,704, Cl. 209-138.000.

Coulombe, Firmin. Hydraulic floor jack. 4,226,401, Cl. 254-2.00B.

Coury, Arthur J.; and Wilary, Frank J., to Medtronic, Inc. Electrical connector for implantable electrical generators. 4,226,244, Cl. 128-419.00P.

Covington Brothers Building Systems, Inc.: *See*—
Artzer, Richard F., 4,226,067, Cl. 52-309.120.

Cowfer, Joseph A.; Jablonski, Dane E.; Kovach, Ronald M.; and Magistro, Angelo J., to B. F. Goodrich Company, The. Method of selecting operation of a fluid-bed reactor and apparatus for doing so. 4,226,798, Cl. 260-465.300.

Cox, Arthur R.; Bourdeau, Romeo G.; and Holiday, Paul R., to United Technologies Corporation. High gamma prime superalloys by powder metallurgy. 4,226,644, Cl. 148-2.000.

Cox, Cornelus P. J.: *See*—
Rosink, Wilhelmus B.; and Cox, Cornelus P. J., 4,227,139, Cl. 318-803.000.

CPC International Inc.: *See*—
Abdullah, Mukhtar; and Armbruster, Frederick C., 4,226,937, Cl. 435-96.000.

Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., to Merck & Co., Inc. 3,3-Substituted spiro-1,2,4-benzothiadiazines. 4,226,867, Cl. 424-246.000.

Cramer, Harold E. Pitless adapter. 4,226,286, Cl. 166-85.000.

CRC Compagnia di Recerca Chimica S.A.: *See*—
Kajfez, Franjo; Sunjic, Vitomir; and Caplar, Vesna, 4,226,766, Cl. 260-239.0BD.

Criminalistics, Inc.: *See*—
Worsham, Robert; and Jenkins, Kurt L., 4,226,740, Cl. 252-408.000.

Critchfield, Frank E.; Gerkin, Richard M.; and Hawker, Leslie E., to Union Carbide Corporation. Mixtures of extenders and polyols or polymer/polyols useful in polyurethane production. 4,226,756, Cl. 260-33.20R.

Crosby, Guy A.: *See*—
DuBois, Grant E.; Stephenson, Rebecca A. G.; and Crosby, Guy A., 4,226,804, Cl. 260-501.110.

Cross, Bryan, to Chloride Group Limited. Electric battery charging apparatus. 4,227,141, Cl. 320-20.000.

Cross, Leslie E.; Newnham, Robert E.; and Skinner, Doyle P., to United States of America, Navy. Flexible piezoelectric composite transducers. 4,227,111, Cl. 310-358.000.

Croswhite, Howard L., to Ford Motor Company. Non-synchronous four speed automatic transmission with overdrive. 4,226,123, Cl. 74-688.000.

Csillag, Zsolt: *See*—
Boros, Jozsef; Csillag, Zsolt; Ferenczi, Tibor; Kalman, Tibor; Lengyel, Laszlo; Matyasi, Jozsef; Orban, Ferenc; Solymar, Karoly; Toth, Bela; Toth, Lajos; Voros, Istan; Wentzely, Kalman; Zambo, Janos; and Zoldi, Jozsef, 4,226,838, Cl. 423-121.000.

Cuffe, Michael. Manufacture of paper tubes. 4,226,171, Cl. 93-81.0MT.

Cuisinarts, Inc.: *See*—
Kafka, Barbara, 4,226,374, Cl. 241-37.500.

Cullity, Richard E.: *See*—
Rallis, Rallie P.; Cullity, Richard E.; and Tamplin, Lyle R., 4,226,300, Cl. 182-2.000.

Cunningham, Arthur C.: *See*—
Glassow, Franklyn A.; and Cunningham, Arthur C., 4,226,484, Cl. 308-201.000.

Cunningham, James A., to National Semiconductor Corporation. Bubble memory process using an aluminum plus water chemical reaction. 4,226,691, Cl. 204-192.00E.

Cushing, Donald S.: *See*—
Jenkins, Thomas E.; Hahn, Thomas M.; and Cushing, Donald S., 4,226,490, Cl. 312-331.000.

Custom Systems Associates, Inc.: *See*—
Fling, James L., 4,226,343, Cl. 222-504.000.

D.J.L.J., Inc.: *See*—
Michaels, Dennis C.; and Michaels, John W., 4,226,508, Cl. 350-319.000.

D. W. Zimmerman Mfg., Inc.: *See*—
Van Orsdale, Laurence S., Jr., 4,226,567, Cl. 414-555.000.

Dahlen, Richard R.; Hansen, Richard L.; and Weiher, Richard L., to Minnesota Mining and Manufacturing Company. Energy control sheet having insulative properties. 4,226,910, Cl. 428-336.000.

Dai-Ichi Seiko Co., Ltd.: *See*—
Katata, Tetsuo, 4,226,381, Cl. 242-71.800.

Daimler-Benz Aktiengesellschaft: *See*—
Ackel, Sabet, 4,226,461, Cl. 296-37.140.
Bernauer, Otto, 4,226,213, Cl. 123-1.00A.

Dallas Instruments: *See*—
Preskitt, Stanley V.; and Cornelius, Larry R., 4,227,198, Cl. 346-1.100.

Dalling, N. Lawrence: *See*—
Sarnoff, Stanley J.; Calkins, George B.; and Dalling, N. Lawrence, 4,226,235, Cl. 128-218.00F.

D'Aloisio, Rino: *See*—
Venturello, Carlo; and D'Aloisio, Rino, 4,226,778, Cl. 260-340.200.

Dam, Jorgen: *See*—
Lund, Svend A.; Iversen, Sven E.; Petersen, Carl E. T.; Bogen, Erik T.; and Dam, Jorgen, 4,226,122, Cl. 73-609.000.

Daman, Ernest L.: *See*—
Kunsagi, Laszlo; and Daman, Ernest L., 4,226,282, Cl. 165-105.000.

Damiani, Martin R.: *See*—
Murdock, Keith C.; Durr, Frederick E.; Damiani, Martin R.; and Izzo, Patrick T., 4,226,869, Cl. 424-258.000.

Dana Corporation: *See*—
Burrington, George C., 4,226,446, Cl. 285-256.000.

Dancsik, Josef J. Quick change tool holder. 4,226,433, Cl. 279-51.000.

Danielsen, Kennet; and Nielsen, Torben, to Thomas J. Lipton, Inc. Spraying. 4,226,182, Cl. 101-129.000.

Data Recording Instrument Company Limited: *See*—
Davenport, Keith B.; and Piper, Ronald N., 4,226,544, Cl. 400-124.000.

Daugherty, Wilma J. Wheel mounted walker with foot pedal brake. 4,226,413, Cl. 272-70.400.

Dautremont, Joseph L. Precision coin analyzer for numismatic application. 4,226,323, Cl. 194-100.00A.

Davenport, Keith B.; and Piper, Ronald N., to Data Recording Instrument Company Limited. Wire printing heads. 4,226,544, Cl. 400-124.000.

Davey, John E.; and Christou, Aristos, to United States of America, Navy. Method for epitaxial growth of GaAs films and devices configuration independent of GaAs substrate utilizing molecular beam epitaxy and substrate removal techniques. 4,226,649, Cl. 148-175.000.

Davies, Robert B.; and Zobel, Don W., to Motorola, Inc. Frequency compensated high frequency amplifiers. 4,227,157, Cl. 330-265.000.

Davis, Albert F. Alarm activating device. 4,227,189, Cl. 340-573.000.

Davis, Ronald P., to Interlock Industries Limited. Window or the like stays. 4,226,002, Cl. 16-179.000.

Davis, William L., to Hicap Engineering & Development Corporation. Fluidized bed reactor. 4,226,830, Cl. 422-143.000.

Day, Paul T., Jr. Reinforced masonry construction. 4,226,061, Cl. 52-122.000.

Dayco Corporation: *See*—
Haren, Doyle V., 4,226,911, Cl. 428-375.000.

Deber, Charles M.: *See*—
Babcock, Donner F.; Deber, Charles M.; Debono, Manuel; Molloy, R. Michael; and Pfeiffer, Douglas R., 4,227,002, Cl. 548-216.000.

Debono, Manuel; and Molloy, R. Michael, to Eli Lilly and Company. Bromo-A-23187 derivatives. 4,227,003, Cl. 548-216.000.

Debono, Manuel: *See*—
Babcock, Donner F.; Deber, Charles M.; Debono, Manuel; Molloy, R. Michael; and Pfeiffer, Douglas R., 4,227,002, Cl. 548-216.000.

Degner, Vernon R.; and Colbert, William V., to Envirotech Corporation. Dispersed air flotation machine. 4,226,706, Cl. 209-170.000.

DeGroff, James T.: *See*—
Feldman, Martin L.; and DeGroff, James T., 4,226,760, Cl. 260-42.140.

DeHaan, John M., to Vermeer Manufacturing Co. Tree transplanting machine. 4,226,033, Cl. 37-2.00R.

De Jule, Michael C., to Zenith Radio Corporation. Cathodoluminescent gas discharge image display panel. 4,227,114, Cl. 313-217.000.

Delagi, Richard G.: *See*—
Baboian, Robert; Haynes, Gardner S.; and Delagi, Richard G., 4,226,694, Cl. 204-196.000.

Delcorio, Guy A.; and Grothaus, Joseph V., to Nalco Chemical Company. Insulating tundish veneer composition useful in casting steel. 4,226,625, Cl. 106-38.220.

Delhome, Rene. Figurine capable of gripping a support. 4,226,046, Cl. 46-123.000.

Delkor Technik (Proprietary) Limited: *See*—
Stielau, Theodor M., 4,226,725, Cl. 210-400.000.

Dellantonio, Ezio F., to Autovox S.p.A. Friction device for use in car radios. 4,226,128, Cl. 74-10.00R.

DeLuca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L., Jr.; and Onisko, Bruce L., to Wisconsin Alumni Research Foundation. Fluorovitamin D compounds and processes for their preparation. 4,226,787, Cl. 260-397.200.

DeLuca, Hector F.; Schnoes, Heinrich K.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, to Wisconsin Alumni Research

Foundation. 24,24-Difluoro-1α,25-dihydroxycholecalciferol. 4,226,788, Cl. 260-397.200.

Deluty, Michael E. Tire traction device. 4,226,272, Cl. 152-225.00C.

Demerson, Christopher A.; and Humber, Leslie G., to American Home Products Corporation. Spiroindolones. 4,226,860, Cl. 424-240.000.

Deming, Charles P.; Rybarczyk, Norbert J., Jr.; and Burkall, Alvin E., to Whirlpool Corporation. Dual energy input cycle for a dryer. 4,226,026, Cl. 34-31.000.

Demole, Edouard: *See*—
Kovats, Ervin; Demole, Edouard; Ohloff, Gunther; and Stoll, Max, deceased, 4,226,892, Cl. 426-538.000.

Demosthene, Claude G.; and Aspisi, Christian R., to "Societe Anonyme" Expansia. Preparation process of 2-chloro pyrimidine. 4,226,995, Cl. 544-334.000.

Den, Hiroshi; Shimizu, Masao; and Shingo, Yoshioki, to Fujikura Cable Works, Ltd. Flat type feeder cable. 4,227,041, Cl. 174-117.00F.

Denecke, Henry M. Shaft rotation interlock system for film editing tables and the like. 4,227,126, Cl. 318-55.000.

Denison, Early B., to Shell Oil Company. Logging while raising a drill string. 4,226,116, Cl. 73-151.000.

Denki Onkyo Co., Ltd.: *See*—
Masuda, Noboru; and Suzuki, Mitsuyuki, 4,227,171, Cl. 338-33.000.

Dental Holding N.V.: *See*—
Schreinemakers, Josephus, 4,226,592, Cl. 433-197.000.

Deo, Subhash R.; and Faudskar, Chester C., to Bell Telephone Laboratories, Incorporated. Electrical interconnection apparatus. 4,226,492, Cl. 339-17.0CF.

deRosset, Armand J.: *See*—
Michalko, Edward; and deRosset, Armand J., 4,226,639, Cl. 127-46.00A.

De Simone, Renato: *See*—
Redaelli, Vincenzo; De Simone, Renato; and Platone, Edoardo, 4,226,810, Cl. 568-386.000.

DeStepheno, George E., to Le Van Specialty Co., Inc. Disengageable hinge device for a removable vehicle roof panel. 4,226,052, Cl. 49-465.000.

Detje, Henry. Pocket organizer. 4,226,350, Cl. 224-247.000.

Deussner, Herbert, to Klockner-Humboldt-Wedag AG. Apparatus for the production of cement clinkers from moist agglomerated raw material. 4,226,585, Cl. 432-106.000.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
Achenbach, Karl; and Turk, Gunter, 4,226,837, Cl. 423-118.000.
Klingler, Karl H.; and Traube, Horst, 4,226,803, Cl. 260-501.110.

Dewar, John H.: *See*—
Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., 4,226,493, Cl. 339-66.00M.

Dewing, Ernest W.; and Southam, Frederick W., to Alcan Research and Development Limited. Carbothermic production of aluminium. 4,226,618, Cl. 75-68.00A.

Dexter, Martin; and Winter, Roland A. E., to Ciba-Geigy Corporation. 2-[2-Hydroxy-3,5-di-(α,α-dimethylbenzyl)-phenyl]-2H-benzotriazole and stabilized compositions. 4,226,763, Cl. 260-45.80N.

Dialog Systems, Inc.: *See*—
Moshier, Stephen L., 4,227,176, Cl. 340-146.30R.
Moshier, Stephen L., 4,227,177, Cl. 340-146.30R.

Dick, Ronald E.: *See*—
Radocy, Robert; and Dick, Ronald E., 4,225,983, Cl. 3-12.000.

Dickerson, Henry A.: *See*—
Safiuddin, Mohammed; and Dickerson, Henry A., 4,227,130, Cl. 318-338.000.

Dickson, Ross P.: *See*—
Absolon, Victor J.; Hurst, George T.; Worboys, John C.; Barnett, George H.; and Dickson, Ross P., 4,226,672, Cl. 162-3.000.

Diehl GmbH & Co.: *See*—
Ruchel, Peter, 4,226,621, Cl. 75-157.500.

Diery, Helmut: *See*—
Herman, Emmanuel; Diery, Helmut; Soreau, Michel; and Christidis, Yani, 4,227,016, Cl. 562-465.000.

Dietsche, Thomas J.; and Love, Jim, to Dow Chemical Company, The. Preparation of polychlorinated pyridines from 2,4-dichloro-6-(trichloro methyl)pyridine. 4,227,001, Cl. 546-345.000.

Dietz, Wolfgang F. W., to RCA Corporation. Switching amplifier for driving a load through an alternating-current path with a constant-amplitude, varying duty cycle signal. 4,227,123, Cl. 315-397.000.

DiLecne, Roland R.; and Szita, Jeno G., to American Cyanamid Company. Melamine-monophthalimides. 4,226,989, Cl. 544-198.000.

Dilworth, Louis R., to Allis-Chalmers Corporation. Apparatus for removal of sulfur from gas. 4,226,831, Cl. 422-173.000.

Dimitrov, Marin A.: *See*—
Nikolov, Ivan D.; Minchev, Pavel M.; Dimitrov, Marin A.; Georgiev, Assen P.; and Chorbov, Iliya G., 4,227,033, Cl. 13-27.000.

Dimitrov, Miklos; Keleman nee Gulyas, Franciska K.; Marko, Richard; Pazonyi, Tamas; Pukanszky, Bela; and Riczko, Andras, to Muanyagipari Kutato Intezet. Process for preparing modified plastic materials. 4,226,750, Cl. 260-23.00H.

Dimroth, Peter; Knittel, Helmut; Seitz, August; and Wolff, Dietrich, to BASF Farben & Fasern AG. Process for preparing pigment compositions. 4,226,634, Cl. 106-288.00Q.

Dirda, John, to Ford Motor Company. Carburetor. 4,226,814, Cl. 261-39.00B.

Disbrow, Lynnford E., to Columbia Photografix, Inc. Method for analyzing seasonal growing conditions of crops. 4,227,211, Cl. 358-113.000.

Doane, Elbert E. Molded storage receptable. 4,226,062, Cl. 52-169.600.

Doerr, Richard L., to Olin Corporation. Use of 2,4,4,4-tetrachlorobutyl acetate as a dye carrier for disperse dyes. 4,226,597, Cl. 8-582.000.

Domken, Iwan, to Karl Lutz, Firma. Method for the manufacture of ampules from glass tubes. 4,226,607, Cl. 65-105.000.

Donaldson, Jack D. Application for locking device for telescoping reaches of logging trailers. 4,226,436, Cl. 280-404.000.

Dooley, James L.: *See*—
Latter, Albert L.; Hammond, R. Philip; and Dooley, James L., 4,226,294, Cl. 180-54.00B.

Dorfeld, William G.: *See*—
Bartholomew, Roger F.; Dorfeld, William G.; Murphy, James A.; Pierson, Joseph E.; Stookey, Stanley D.; and Tick, Paul A., 4,226,628, Cl. 106-47.00R.

Dorol, Henri, to Verlinde, Societe Anonyme. Apparatus for taking up wear in a brake and brake utilizing this apparatus. 4,226,307, Cl. 188-196.00V.

Dottor, Frank A.; and Dottor, Shirley E. Automobile trunk contained grocery bag holder. 4,226,348, Cl. 224-42.420.

Dottor, Shirley E.: *See*—
Dottor, Frank A.; and Dottor, Shirley E., 4,226,348, Cl. 224-42.420.

Douglas, George R.; and Thompson, John H., to Westinghouse Electric Corp. Transducer control system. 4,227,110, Cl. 310-316.000.

Douglas, Homer C., to Cable Caddy, Inc. Support device and flange attachment means for cable drums. 4,226,383, Cl. 242-77.000.

Dow Chemical Company, The: *See*—
Bennett, Robert B., 4,226,071, Cl. 52-741.000.
Dietsche, Thomas J.; and Love, Jim, 4,227,001, Cl. 546-345.000.
Park, Chung P.; and Bouton, Richard A., 4,226,946, Cl. 521-98.000.
Tsang, Floris Y., 4,226,921, Cl. 429-104.000.

Dowa Mining Co., Ltd.: *See*—
Watanabe, Yasuo; Isoyama, Seizi; and Yamamichi, Yoshikazu, 4,226,843, Cl. 423-594.000.

Downing, Neil H.: *See*—
Towns, Edward J.; and Brown, Edward M., 4,226,341, Cl. 222-440.000.

Doyle, William C., Jr.: *See*—
Kirkpatrick, Joel L.; and Doyle, William C., Jr., 4,226,873, Cl. 424-269.000.

Drackett Company, The: *See*—
Bush, William G.; and Braun, Valerie D., 4,226,736, Cl. 252-135.000.

Dragoco, Inc.: *See*—
Yuhas, Edward R., 4,226,889, Cl. 424-59.000.

Dressel, Lawrence J.: *See*—
Chelcun, Darrell; and Dressel, Lawrence J., 4,227,045, Cl. 178-66.100.

Dreyfus, Gerard; Lewiner, Jacques; and Perino, Didier. Detectors of parameters adapted to act on the force of attraction between an electret and an electrode. 4,227,086, Cl. 250-389.000.

Dreyfus, Marc G.; and Pellman, Arnold. Electro-optical contour measuring system. 4,226,536, Cl. 356-376.000.

Druss, Marian A., executrix: *See*—
Druss, Raymond, deceased; and Hoffmeister, Glenn, 4,227,106, Cl. 310-184.000.

Druss, Raymond, deceased (by Druss, Marian A., executrix); and Hoffmeister, Glenn, to Emerson Electric Co. High voltage induction motor without ladder insulation between motor windings and method of construction therefor. 4,227,106, Cl. 310-184.000.

DSO "Cherna Metalurgia": *See*—
Genev, Ivan V.; Konstantinov, Mihail; Valchev, Alexander; and Peev, Vassil, 4,226,207, Cl. 118-620.000.

Du Pont Canada Inc.: *See*—
Harbourne, David A., 4,226,905, Cl. 428-220.000.
Mountney, Bruce D.; and Wirsig, Ralph C., 4,226,079, Cl. 57-288.000.

DuBois, Grant E.; Stephenson, Rebecca A. G.; and Crosby, Guy A., to Dynapol. Alpha amino acid dihydrochalcones. 4,226,804, Cl. 260-501.110.

Dudley, Philip W.: *See*—
Bower, Lewis R. B.; Dudley, Philip W.; and Smith, John C., 4,226,558, Cl. 405-302.000.

Duenser, William F., to Signode Corporation. Sealless strap connection. 4,226,007, Cl. 24-20.0EE.

Dukes, John N.; Bryson, Charles E., III; and Weber, Lynn, to Hewlett-Packard Company. Multipath fine positioning beam director. 4,227,079, Cl. 250-231.0SE.

Dumond, Duane I. Hydraulically actuated hoist for tractors having a conventional three point hitch. 4,226,331, Cl. 212-258.000.

Dunlop Limited: *See*—
Young, Maurice A., 4,226,654, Cl. 156-123.00R.

Du Pont de Nemours, E. I., and Company: *See*—
Bowman, Edward B., 4,226,795, Cl. 210-449.500.
Frazer, August H., 4,226,970, Cl. 528-128.000.
Marsh, Frank D., 4,226,783, Cl. 260-351.000.
Memeger, Wesley, Jr., 4,226,949, Cl. 521-184.000.
Pelosi, Lorenzo F., 4,226,954, Cl. 525-259.000.
Vassiliou, Eustathios, 4,226,646, Cl. 148-6.14R.

Dupont, Jacques J. M. J. A. G., to Nichols Engineering Societe Anonyme. Method for treating a mineral sulfide. 4,226,617, Cl. 75-7.000.

Duquenne, Claude; and Mondy, Andre, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.). Magnetic-control closure system. 4,226,427, Cl. 277-80.000.

Durant, Graham J.; Emmett, John C.; and Ganellin, Charo R., to Smith Kline & French Laboratories Limited. Pharmacologically active thiourea and urea compositions and methods of use. 4,226,874, Cl. 424-269.000.

Durkoppwerke GmbH: *See*—
Pollmeier, Konrad; and Thesing, Wilhelm, 4,226,197, Cl. 112-121.110.

Duro-Test Corporation: *See*—
Walsh, Peter, 4,227,113, Cl. 313-112.000.

Durr-Dental KG: *See*—
Hofmann, Hans-Joachim, 4,226,590, Cl. 433-28.000.

Durr, Frederick E.: *See*—
Murdock, Keith C.; Durr, Frederick E.; Damiani, Martin R.; and Izzo, Patrick T., 4,226,869, Cl. 424-258.000.

Dynamit Nobel Aktiengesellschaft: *See*—
Kotzsch, Hans-Joachim; Seiler, Claus-Dietrich; and Vahlensieck, Hans-Joachim, 4,226,793, Cl. 556-470.000.

Dynapol: *See*—
DuBois, Grant E.; Stephenson, Rebecca A. G.; and Crosby, Guy A., 4,226,804, Cl. 260-501.110.

Dyroff, David R.; and Papanu, Victor D., to Monsanto Company. Process for the preparation of polymeric acetal carboxylates. 4,226,959, Cl. 525-401.000.

Dyroff, David R.; and Papanu, Victor D., to Monsanto Company. Process for the preparation of polymeric acetal carboxylates. 4,226,960, Cl. 525-401.000.

Dzus Fastener Co., Inc.: *See*—
Schenk, Peter, 4,226,009, Cl. 24-221.00R.

E. Sachs & Co. Ltd.: *See*—
Hallam, Dennis M., 4,226,056, Cl. 52-11.000.

Early, Judson H.: *See*—
Off, Joseph W. A.; Early, Judson H.; and Greer, William B., 4,226,661, Cl. 156-358.000.

Easler, Dean E. Electronic musical instrument. 4,226,154, Cl. 84-1.010.

Eastin, David L.: *See*—
Carlson, Russell L.; Eastin, David L.; Loehning, Ralph H.; and Stalker, William E., 4,226,658, Cl. 156-247.000.

Eastman Kodak Company: *See*—
Clark, Raymond D., 4,226,776, Cl. 260-326.260.
Foster, Charles H.; and Nelan, Donald R., 4,226,786, Cl. 260-397.200.
Nelan, Donald R., 4,226,785, Cl. 260-397.250.
Zigman, Seymour; and Gilman, Paul B., Jr., 4,226,868, Cl. 424-258.000.

Eaton Corporation: *See*—
Ekeleme, Charles E., Jr.; and Richards, Donald L., 4,226,261, Cl. 137-469.000.
Hansen, James E.; and Lorenz, Willard S., 4,227,231, Cl. 361-154.000.
Kintner, Paul M., 4,227,247, Cl. 364-900.000.

Eaton Stamping: *See*—
Hamman, Lyle J., 4,227,104, Cl. 310-75.00R.

Ebach, Alfred. Attachment for musical wind operated instruments. 4,226,162, Cl. 84-400.000.

Ebert, Harry K., Jr., to Bell Telephone Laboratories, Incorporated. Frequency generator with a controlled limit on frequency deviation from a synchronizing frequency. 4,227,154, Cl. 328-141.000.

Ebihara, Heihachiro; Sekiya, Fukuo; and Yamada, Takashi, to Citizen Watch Co., Ltd. Drive system for liquid crystal display device. 4,227,192, Cl. 340-765.000.

Eckhart, Thomas D.; Nelson, Richard L.; and Hoglan, Jack M., to Eckhart, Thomas D. Anatomy testing device. 4,226,229, Cl. 128-66.000.

Economopoulos, Mario; and Respen, Jean Y., to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie. Plants for treating rolled steel products. 4,226,106, Cl. 72-39.000.

Economopoulos, Marios: *See*—
Wilmotte, Stephan H.; Nautet, Jean A.; and Economopoulos, Marios, 4,226,108, Cl. 72-201.000.

Ed. Geistlich Sohne A.G. fur Chemische Industrie: *See*—
Pfirrmann, Rolf W.; and Wicki, Otto, 4,226,858, Cl. 424-195.000.

Edblad, Warren A.; Gomola, John W.; Wallace, Frank E.; Wood, William G.; and Jones, F. David, to Westinghouse Electric Corp. Digital computer monitored system or process which is configured with the aid of an improved automatic programming system. 4,227,245, Cl. 364-468.000.

Edgar, Richard H.; Eves, E. Eugene, II; and Gilliatt, Charles L., to Raytheon Company. Microwave apparatus seal. 4,227,063, Cl. 219-10.55A.

Edward W. Daniel Company: *See*—
Kupcak, Kenneth S.; and Piecuch, Rudolph F., 4,226,550, Cl. 403-157.000.

Efros, Boris. Bicycle seat adjustable during ride. 4,226,435, Cl. 280-283.000.

Egami, Kazuhito: *See*—
Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito, 4,227,107, Cl. 310-198.000.

Egami, Takeshi: *See*—
Hatta, Shinichiro; Egami, Takeshi; and Graham, Charles D., Jr., 4,226,619, Cl. 75-123.00K.

Egorova, Tatyana S.: *See*—
Frolov, Jury F.; Piljukov, Jury F.; Cherednichenko, Vladimir S.; Orlov, Gennady I.; Kurapin, Igor N.; Shabalina, Roza I.; Lakernik, Mark M.; Gavrilenko, Alexandr F.; Yakovenko, Anatoly A.; Elkina, Alla K.; Golovachev, Anatoly I.; Egorova, Tatyana S.; Vlasov, Jury M.; Smelyansky, Matvei Y., deceased; and Zelichenko, Faina S., administator, 4,226,406, Cl. 266-148.000.

Ehrenpreis, Seymour; and Freedman, Barry, to Peterson Labs., Inc. Smoking system to filter tobacco smoke. 4,226,250, Cl. 131-187.000.

Ehrhardt, Gerry H.: *See*—
Carlson, Gene D.; and Ehrhardt, Gerry H., 4,226,442, Cl. 282-27.500.

Ehrsam, William F.; Elander, Robert C.; Hollis, Lloyd L.; Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Oseas, Jonathan; and Tuchman, Walter L., to International Business Machines Corporation. Cryptographic communication security for multiple domain networks. 4,227,253, Cl. 375-2.000.

Eibeck, Richard E.: *See*—
Booth, Robert E.; Evans, Francis E.; Eibeck, Richard E.; and Robinson, Martin A., 4,227,027, Cl. 585-465.000.

Eichner, Mary A.: *See*—
Watson, Charles R., Jr.; and Eichner, Mary A., 4,226,969, Cl. 528-93.000.

Einhorn, Ruediger, to Coats & Clark, Inc. Adjustable mounting arrangement for hooks and the like. 4,226,394, Cl. 248-225.100.

Eisinger, Frantisek L.; and Pratt, Harry H., to Foster Wheeler Energy Corporation. Method of suppressing formation of heat exchange fluid particles into standing waves. 4,226,279, Cl. 165-1.000.

Eizember, Richard F.; Vogler, Kathleen R.; and Cannon, William N., to Eli Lilly and Company. Removal of nitrosamines from denitroanilines by treatment with HCl. 4,226,789, Cl. 260-397.70R.

Ekeleme, Charles E., Jr.; and Richards, Donald L., to Eaton Corporation. Relief valve. 4,226,261, Cl. 137-469.000.

Ekman, Uno. Portable lathe device. 4,226,146, Cl. 82-4.00A.

Elander, Robert C.: *See*—
Ehrsam, William F.; Elander, Robert C.; Hollis, Lloyd L.; Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Oseas, Jonathan; and Tuchman, Walter L., 4,227,253, Cl. 375-2.000.

Elders, Marius J. A.; and Hopmans, Jan H. M., to U.S. Philips Corporation. High-voltage transformer. 4,227,143, Cl. 323-48.000.

Electric Power Research Institute, Inc.: *See*—
Hatta, Shinichiro; Egami, Takeshi; and Graham, Charles D., Jr., 4,226,619, Cl. 75-123.00K.
Pelletier, Charles A.; and Barefoot, Edgar D., 4,226,113, Cl. 73-40.700.

Electrometer Corporation: *See*—
Sunde, Paul B., 4,227,085, Cl. 250-384.000.

Elfab Corporation: *See*—
Langham, Arvin L., 4,226,496, Cl. 339-176.0MP.

Eli Lilly and Company: *See*—
Babcock, Donner F.; Deber, Charles M.; Debono, Manuel; Molloy, R. Michael; and Pfeiffer, Douglas R., 4,227,002, Cl. 548-216.000.
Cooper, Robin D. G.; Koppel, Gary A.; and McShane, Lawrence J., 4,226,767, Cl. 260-239.00A.
Debono, Manuel; and Molloy, R. Michael, 4,227,003, Cl. 548-216.000.
Eizember, Richard F.; Vogler, Kathleen R.; and Cannon, William N., 4,226,789, Cl. 260-397.70R.
Hatfield, Lowell D.; Blaszczak, Larry C.; and Fisher, Jack W., 4,226,986, Cl. 544-16.000.
Marshall, Winston S.; and Pfeifer, William, 4,226,887, Cl. 424-356.000.

Elkina, Alla K.: *See*—
Frolov, Jury F.; Piljukov, Jury F.; Cherednichenko, Vladimir S.; Orlov, Gennady I.; Kurapin, Igor N.; Shabalina, Roza I.; Lakernik, Mark M.; Gavrilenko, Alexandr F.; Yakovenko, Anatoly A.; Elkina, Alla K.; Golovachev, Anatoly I.; Egorova, Tatyana S.; Vlasov, Jury M.; Smelyansky, Matvei Y., deceased; and Zelichenko, Faina S., administator, 4,226,406, Cl. 266-148.000.

Elliott, Lloyd E., Jr., to Texaco Inc. High duty-cycle sweep generator for a cathode ray oscilloscope. 4,227,124, Cl. 315-408.000.

Ellis, Christopher I. A.; and Naylor, Edward L., to Malcom-Ellis (Liverpool) Limited. Measurement and monitoring of the electrical conductivity of liquor samples. 4,227,151, Cl. 324-448.000.

Elshof, Leonardus A. M.; and Van Heek, Herman F., to U.S. Philips Corporation. Color display tube with shadow mask having elongated apertures therein. 4,227,115, Cl. 313-403.000.

Emerson Electric Co.: *See*—
Druss, Raymond, deceased; and Hoffmeister, Glenn, 4,227,106, Cl. 310-184.000.

Emmett, John C.: *See*—
Durant, Graham J.; Emmett, John C.; and Ganellin, Charo R., 4,226,874, Cl. 424-269.000.

Endo, Hiroshi: *See*—
Komeya, Katsutoshi; Inoue, Hiroshi; Kudo, Haruo; and Endo, Hiroshi, 4,226,841, Cl. 423-345.000.

Endo, Kunio: *See*—
Kobayashi, Akio; Endo, Kunio; and Omori, Norio, 4,226,215, Cl. 123-487.000.

Energy Conversion Devices, Inc.: *See*—
Marshall, Gerald F., 4,226,522, Cl. 355-1.000.
Ovshinsky, Herbert C.; and Marshall, Gerald F., 4,226,523, Cl. 355-1.000.
Ovshinsky, Stanford R.; and Madan, Arun, 4,226,898, Cl. 427-39.000.

Energy & Minerals Research Co.: *See*—
Tarpley, William B., Jr.; Huzinec, John R.; and Freeman, Marion K., 4,226,727, Cl. 252-8.000.

Engel, Oleg: *See*—
Beranek, Jaroslav; Pihert, Dobromil; and Engel, Oleg, 4,226,835, Cl. 422-310.000.

Engelhard Minerals & Chemicals Corporation: *See*—
Aliotta, Joseph; and Alcuri, Louis F., Jr., 4,226,622, Cl. 75-251.000.

English Electric Valve Company Limited: *See*—
Nixon, Ralph D., 4,227,210, Cl. 358-113.000.

enkel Kommanditgesellschaft auf Aktien: *See—*
Tesmann, Holger; Weinrich, Erwin; and Lieske, Edgar, 4,226,852, Cl. 424-62.000.
Ennis, George T., to N/S Car Wash Enterprises, Inc. Brush assembly for vehicle washing apparatus having a flexible elastic coupling. 4,225,995, Cl. 15-53.0AB.
Entreprise d'Equipements Mecaniques et Hydrauliques E.M.H.: *See—*
Tuson, Samuel, 4,226,204, Cl. 114-230.000.
Environmental Sciences Associates, Inc.: *See—*
Matson, Wayne R., 4,226,695, Cl. 204-231.000.
Envirotech Corporation: *See—*
Degner, Vernon R.; and Colbert, William V., 4,226,706, Cl. 209-170.000.
Erdmann, Klaus, to Bayerische Motoren Werke Aktiengesellschaft. Disk brake for vehicles, especially for motorcycles. 4,226,304, Cl. 188-18.00A.
Erickson, James R.; and Seidewand, Robert J., to SCM Corporation. Emulsion process for polymer particles. 4,226,752, Cl. 260-29.6RB.
Ericsson, Sylve J. D., to Svecia Silkscreen Maskiner AB. Method and apparatus for adjusting the position of a stencil relative to a printing table. 4,226,181, Cl. 101-129.000.
Ernst Leitz Wetzlar GmbH: *See—*
Heitmann, Knut; Schneider, Eckart; and Lussem, Heribert, 4,226,535, Cl. 356-373.000.
Ernster, Peter J.: *See—*
Cockroft, James B.; and Ernster, Peter J., 4,227,128, Cl. 318-325.000.
Ershov, Geny S.: *See—*
Anfilov, Igor V.; Abramov, Jury V.; Ershov, Geny S.; Bogomolov, Valentin G.; Kaidoshko, Eduard A.; Remizov, Jury B.; Roz-henko, Anatoly L.; and Suvorov, Gennady P., 4,226,514, Cl. 354-7.000.
Erwin Sick GmbH, Optik-Elektronik: *See—*
Sick, Erwin, 4,227,091, Cl. 250-572.000.
Eshghy, Siavash, to Rockwell International Corporation. Tension control of fasteners. 4,226,014, Cl. 29-407.000.
Eshghy, Siavash, to Rockwell International Corporation. Tension control of fasteners. 4,226,015, Cl. 29-407.000.
Espana, Guillermo A., to University of Miami. Remotely controlled roller platform for use in a visual aid system. 4,226,191, Cl. 108-20.000.
Espelage, Paul M.; and Walker, Loren H., to General Electric Company. Reversible variable frequency oscillator for smooth reversing of AC motor drives. 4,227,138, Cl. 318-802.000.
Espenschied, Helmut, to Robert Bosch GmbH. Automatic transmission gear change shock reduction system particularly for automotive drive trains. 4,226,141, Cl. 74-858.000.
Esposito, Robert A.: *See—*
Brower, Van Pelt; Esposito, Robert A.; and Soar, Thomas E., 4,226,818, Cl. 264-40.100.
Essebaggers, Jan, to B.V. Neratoom. Method of repairing a heat exchanger and body for use in this method. 4,226,012, Cl. 29-157.30R.
Estabrooks, David A.: *See—*
McIntosh, Robert A., Sr.; Bernier, Richard G.; and Estabrooks, David A., 4,226,410, Cl. 270-61.00F.
Ethicon, Inc.: *See—*
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,226,243, Cl. 128-335.500.
Ethyl Corporation: *See—*
Hayes, Thomas H., 4,226,367, Cl. 239-327.000.
Jones, Jesse D.; and Hornbaker, Edwin D., 4,226,757, Cl. 260-37.00R.
Euler, John W.; and Pear, Arthur W., to Lambert Brake Corporation. Hydraulic clutch. 4,226,319, Cl. 192-85.0CA.
Evans, Francis E.: *See—*
Booth, Robert E.; Evans, Francis E.; Eibeck, Richard E.; and Robinson, Martin A., 4,227,027, Cl. 585-465.000.
Evans, Jack E. Gas well dewatering method and system. 4,226,284, Cl. 166-64.000.
Eves, E. Eugene, II: *See—*
Edgar, Richard H.; Eves, E. Eugene, II; and Gilliatt, Charles L., 4,227,063, Cl. 219-10.55A.
EWG Import u. Export GmbH & Co. Handelskommanditgesellschaft: *See—*
Schmidt, Klaus, 4,226,177, Cl. 99-372.000.
Excel Industries, Inc.: *See—*
Mullet, David L.; Rilling, Raymond J.; and Voth, Elmer D., 4,226,074, Cl. 56-320.200.
Exxon Research & Engineering Co.: *See—*
Bearden, Roby, Jr.; and Aldridge, Clyde L., 4,226,742, Cl. 252-431.00C.
Henderson, Don J., 4,226,913, Cl. 428-421.000.
Lundberg, Robert D.; and Makowski, Henry S., 4,226,751, Cl. 260-23.50A.
Vandling, John M., 4,227,218, Cl. 358-282.000.
Ezekiel, Frederick D.; and Carroll, Alf L., Jr., to Foxboro Company, The. Dual output force motor. 4,227,100, Cl. 310-13.000.
F. Jos. Lamb Company: *See—*
Pruvot, Francois C., 4,226,485, Cl. 308-207.00R.
Fairchild Incorporated: *See—*
Fairchild, Jack R.; Lagowski, Joseph V.; and Gordon, James W., 4,226,476, Cl. 299-31.000.
Fairchild, Jack R.; Lagowski, Joseph V.; and Gordon, James W., to Fairchild Incorporated. Continuous miner with improved roof-to-floor anchoring canopy units for advancing and turning machine and installing roof bolts. 4,226,476, Cl. 299-31.000.
Fairfield University: *See—*
Kuck, Julius A., 4,226,534, Cl. 356-367.000.
Fameccanica S.p.A.: *See—*
Bianco, Carlo, 4,226,238, Cl. 128-287.000.
Fancy, Thomas A.; and Behringer, Donald F., to General Electric Company. Reference signal circuit. 4,227,072, Cl. 235-92.0CA.
Fansteel Inc.: *See—*
Kraemer, Rolf H., 4,226,560, Cl. 407-101.000.
Farrand, Clair L.; and Clifford, William H., to Farrand Industies, Inc. Correction of linear errors in position measuring transducers. 4,227,165, Cl. 336-20.000.
Farrand Industies, Inc.: *See—*
Farrand, Clair L.; and Clifford, William H., 4,227,165, Cl. 336-20.000.
Faudskar, Chester C.: *See—*
Deo, Subhash R.; and Faudskar, Chester C., 4,226,492, Cl. 339-17.0CF.
Faure, Louis H.; and Hodge, Philo B., to International Business Machines Corporation. Sensing probe for determining location of conductive features. 4,227,149, Cl. 324-158.00P.
Federal-Mogul Corporation: *See—*
Ladin, Eli M., 4,226,321, Cl. 192-110.00B.
Feeney, Joseph D.: *See—*
Nardella, Paul C.; Feeney, Joseph D.; Wrublewski, Thomas A.; and Gonsalves, Anthony W., 4,227,140, Cl. 320-2.000.
Feffer, Philip C., to Chevron Research Company. Process for bounce crimp texturizing yarn. 4,226,010, Cl. 28-248.000.
Feldkamper, Richard; and Ginschel, Klaus, to Windmoller & Holscher. Apparatus for transversely severing or transversely perforating webs of material. 4,226,149, Cl. 83-305.000.
Feldman, Martin L.; and DeGroff, James T., to Tenneco Chemicals, Inc. Colored rigid thermoplastic resin compositions and a process for their production. 4,226,760, Cl. 260-42.140.
Fencl, George A., to Talos Systems, Inc. Pen status system for digitizer pen. 4,227,044, Cl. 178-19.000.
Ferdinand, Scott A., to Mattel, Inc. Music synthesizer. 4,226,155, Cl. 84-1.030.
Ferenczi, Tibor: *See—*
Boros, Jozsef; Csillag, Zsolt; Ferenczi, Tibor; Kalman, Tibor; Lengyel, Laszlo; Matyasi, Jozsef; Orban, Ferenc; Solymar, Karoly; Toth, Bela; Toth, Lajos; Voros, Istan; Wentzely, Kalman; Zambo, Janos; and Zoldi, Jozsef, 4,226,838, Cl. 423-121.000.
Ferguson, Frederick A., to Sonic Dehydrators, Inc. Spray drying apparatus utilizing pulse jet engines. 4,226,668, Cl. 159-4.00A.
Ferguson, Frederick A.; and Payne, Rodney D., to Sonic Dehydrators, Inc. Material injection nozzle for pulse jet drying systems. 4,226,670, Cl. 159-16.00R.
Fern Engineering: *See—*
Wadsworth, Walter J., 4,226,068, Cl. 52-508.000.
Fernando, Quintus: *See—*
Zeitlin, Harry; and Fernando, Quintus, 4,226,836, Cl. 423-41.000.
Ferodo Limited: *See—*
Chester, John, 4,226,759, Cl. 260-38.000.
Ferraris, Giampiero, to GTE Automatic Electric Laboratories Incorporated. Titanium nitride as one layer of a multi-layered coating intended to be etched. 4,226,932, Cl. 430-312.000.
Ferriss, Lincoln S.: *See—*
Schroeder, George F.; and Ferriss, Lincoln S., 4,227,158, Cl. 331-2.000.
Ferritto, James J.: *See—*
Carlson, Robert K.; and Ferritto, James J., 4,226,900, Cl. 427-228.000.
Fett, Kurt: *See—*
Schirmer, Ulrich; Rohr, Wolfgang; Wuerzer, Bruno; and Fett, Kurt, 4,227,007, Cl. 560-25.000.
Feuer, Laszlo, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. L-gamma-glutamyl-taurine as extracted from parathyroid gland and method of treatment using same. 4,226,884, Cl. 424-303.000.
Fiat Auto S.p.A.: *See—*
Palazzetti, Mario, 4,226,214, Cl. 123-2.000.
Fieldhouse, John W.; and Graves, Daniel F., to Firestone Tire & Rubber Company, The. Process for the polymerization of cyclic polyhalophosphazenes using a catalyst composition of boron trihalide and oxygenated phosphorus compounds. 4,226,840, Cl. 423-300.000.
Finommechanikai Vallalat: *See—*
Paradi, Laszlo; Acs, Miklos; Szucs, Tibor; and Konkoly, Tibor, 4,227,065, Cl. 219-121.0EM.
Firestone Tire & Rubber Company, The: *See—*
Fieldhouse, John W.; and Graves, Daniel F., 4,226,840, Cl. 423-300.000.
Halasa, Adel F.; Carlson, David W.; and Hall, James E., 4,226,952, Cl. 525-192.000.
Schulz, Donald N.; and Trivedi, Prakash D., 4,226,746, Cl. 260-3.300.
Schulz, Donald N.; and Trivedi, Prakash D., 4,226,956, Cl. 525-330.000.
Schulz, Donald N.; Kang, Jung W.; and Spiewak, John W., 4,226,972, Cl. 528-168.000.
Firmenich SA: *See—*
Kovats, Ervin; Demole, Edouard; Ohloff, Gunther; and Stoll, Max, deceased, 4,226.892, Cl. 426-538.000.
Firmenich, S.A.: *See—*
Naf, Ferdinand, 4,226,744, Cl. 252-522.00R.
Thomas, Alan F., 4,226,745, Cl. 252-522.00R.
Firth Carpets Limited: *See—*
Booth, David, 4,226,196, Cl. 112-79.00R.

Fischer & Porter Co.: *See*—
Herzl, Peter J., 4,226,117, Cl. 73-861.220.

Fischer, Wolf-Dieter: *See*—
Gurley, Thomas M.; Hopkins, Robert S., Jr.; and Fischer, Wolf-Dieter, 4,227,215, Cl. 358-160.000.

Fisher, Abraham: *See*—
Cohen, Sasson; and Fisher, Abraham, 4,226,996, Cl. 546-89.000.

Fisher, Jack W.: *See*—
Hatfield, Lowell D.; Blaszczak, Larry C.; and Fisher, Jack W., 4,226,986, Cl. 544-16.000.

Fisons Limited: *See*—
Colley, Edward E. S., 4,226,537, Cl. 356-427.000.

Fitzgerald, James A.; Kopp, Clinton V.; and Washington, Freddie L., to Baxter Travenol Laboratories, Inc. Method and apparatus for winding hollow filaments. 4,226,378, Cl. 242-18.00G.

Fitzgerald, William, to Microwave Semiconductor Corp. Composite flanged ceramic package for electronic devices. 4,227,036, Cl. 174-16.0HS.

Flagg, John F.; and Antos, George J., to UOP Inc. Dehydrogenation method and nonacidic multimetallic catalytic composite for use therein. 4,227,026, Cl. 585-434.000.

Flesche, Klaus: *See*—
Moll, Hans; and Flesche, Klaus, 4,226,466, Cl. 296-190.000.

Fletcher Sutcliffe Wild Limited: *See*—
Bower, Lewis R. B.; Dudley, Philip W.; and Smith, John C., 4,226,558, Cl. 405-302.000.

Fletcher-Terry Company, The: *See*—
Insolio, Thomas A., 4,226,153, Cl. 83-881.000.

Fling, James L., to Custom Systems Associates, Inc. Valving apparatus. 4,226,343, Cl. 222-504.000.

Folden, Denver C.: *See*—
Appleby, Paul E.; Folden, Denver C.; Stalter, Joseph F., Jr.; and Swanson, Harry R., 4,226,656, Cl. 156-132.000.

Foller, Werner, to GESTRA-KSB Vertriebsgesellschaft mbH & Co. KG. High pressure steam trap. 4,226,362, Cl. 236-58.000.

Ford Motor Company: *See*—
Brittain, William J., 4,227,181, Cl. 340-167.00R.
Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., 4,226,493, Cl. 339-66.00M.
Croswhite, Howard L., 4,226,123, Cl. 74-688.000.
Dirda, John, 4,226,814, Cl. 261-39.00B.
Mikkor, Mati, 4,226,923, Cl. 429-104.000.
Terner, Leslie L.; Moskowitz, David; and Van Alsten, Roy L., 4,226,914, Cl. 428-446.000.

Forest Laboratories Inc.: *See*—
Schor, Joseph M., 4,226,849, Cl. 424-19.000.

Foster, Charles H.; and Nelan, Donald R., to Eastman Kodak Company. Process for dehydrogenation of sterols to produce Δ^4-3-ketosteroids (II). 4,226,786, Cl. 260-397.200.

Foster Wheeler Energy Corporation: *See*—
Eisinger, Frantisek L.; and Pratt, Harry H., 4,226,279, Cl. 165-1.000.
Kunsagi, Laszlo; and Daman, Ernest L., 4,226,282, Cl. 165-105.000.

Fouquet, Gerd; Merger, Franz; and Baer, Karl, to BASF Aktiengesellschaft. Manufacture of propylene oxide. 4,226,780, Cl. 260-348.160.

Foxboro Company, The: *See*—
Ezekiel, Frederick D.; and Carroll, Alf L., Jr., 4,227,100, Cl. 310-13.000.

Fragnet, Jean, to Carba Societe Anonyme. Apparatus for maintaining the negative potential of human, animal, and plant cells. 4,226,246, Cl. 128-420.00R.

Frank, Roger F. Control unit for the supply of a work unit fed in parallel from a hydraulic station common to other units. 4,226,166, Cl. 91-5.000.

Franz, John E.; and Kaufman, Robert J., to Monsanto Company. N-Phosphonomethylglycine thioester herbicides. 4,226,611, Cl. 71-87.000.

Franz Wittmann Kommanditgesellschaft: *See*—
Wittmann, Franz; and Mitterbauer, Franz, 4,226,470, Cl. 297-108.000.

Fraser, Malcolm J.: *See*—
Westfall, Lee R.; and Fraser, Malcolm J., 4,227,061, Cl. 219-9.500.

Frazer, August H., to Du Pont de Nemours, E. I., and Company. Polyesters derived from diketodiols and aromatic dicarboxylic acids and filaments thereof. 4,226,970, Cl. 528-128.000.

Freber, Elmer C., to Marquette Tool and Die Company. Furniture swivel. 4,226,398, Cl. 248-415.000.

Freedman, Barry: *See*—
Ehrenpreis, Seymour; and Freedman, Barry, 4,226,250, Cl. 131-187.000.

Freeman, Marion K.: *See*—
Tarpley, William B., Jr.; Huzinec, John R.; and Freeman, Marion K., 4,226,727, Cl. 252-8.000.

Fremont, Henry A., to Champion International Corporation. Color removal from paper and pulp mill aqueous effluents. 4,226,673, Cl. 162-29.000.

French, Herbert A., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Viewing systems. 4,226,529, Cl. 356-5.000.

Frenkel, Alexander D.: *See*—
Copp, Frederick C.; Roberts, Peter T.; Frenkel, Alexander D.; and Collard, David, 4,226,876, Cl. 424-273.00R.

Frestad, Finn. Rope descent control-brake. 4,226,305, Cl. 188-65.200.

Friedman, Moshe; and Ury, Michael G., to United States of America, Navy. Current-reducing device. 4,227,170, Cl. 337-204.000.

Friend, Raymond A., to National-Standard Company. Rubber adherent ternary Cu-Zn-Ni Alloy coated steel wires. 4,226,918, Cl. 428-676.000.

Frolov, Jury F.; Piljukov, Jury F.; Cherednichenko, Vladimir S.; Orlov, Gennady I.; Kurapin, Igor N.; Shabalina, Roza I.; Lakernik, Mark M.; Gavrilenko, Alexandr F.; Yakovenko, Anatoly A.; Elkina, Alla K.; Golovachev, Anatoly I.; Egorova, Tatyana S.; Vlasov, Jury M.; Smelyansky, Matvei Y., deceased; and by Zelichenko, Faina S., administator. Apparatus for the complex continuous processing of polymetallic raw materials. 4,226,406, Cl. 266-148.000.

Frosch, Robert A.; Miller, Charles G.; and Stephens, James B. Underground mineral extraction. 4,226,475, Cl. 299-13.000.

Frye Copysystems, Inc.: *See*—
Carlson, Gene D.; and Ehrhardt, Gerry H., 4,226,442, Cl. 282-27.500.

Fuji Photo Film Co., Ltd.: *See*—
Shirahata, Ryuji; and Kitamoto, Tatsuji, 4,226,681, Cl. 204-38.0ST.
Yamagis, Kikuo; Okuyama, Hiroshi; and Kawaguchi, Hideo, 4,226,825, Cl. 264-235.000.

Fujikura Cable Works, Ltd.: *See*—
Den, Hiroshi; Shimizu, Masao; and Shingo, Yoshioki, 4,227,041, Cl. 174-117.00F.

Fujimi Kenmazai Kogyo Co., Ltd.: *See*—
Koshiyama, Isamu; and Naitou, Yoshisuke, 4,226,623, Cl. 106-3.000.

Fujioka, Keiji: *See*—
Tsuji, Terutsugu; Sato, Shigeji; Fujioka, Keiji; Yamahira, Yoshiya; and Maeda, Tadao, 4,226,769, Cl. 260-239.100.

Fujisato, Harumi: *See*—
Fujita, Teizo; Ikebata, Toyokazu; and Fujisato, Harumi, 4,227,162, Cl. 335-202.000.

Fujisawa, Seiji; and Yukumoto, Toshitaka, to Matsushita Electric Industrial Co., Ltd. Convergence device for projection type color television system. 4,227,122, Cl. 315-368.000.

Fujita, Saburo: *See*—
Motegi, Masahiko; Tanaka, Kazuhiro; and Fujita, Saburo, 4,226,826, Cl. 264-235.800.

Fujita, Teizo; Ikebata, Toyokazu; and Fujisato, Harumi, to Izumi Denki Corporation. Electromagnet relay with specific housing structure. 4,227,162, Cl. 335-202.000.

Fujitsu Limited: *See*—
Kazama, Kazuo; Oka, Akira; Shigihara, Masayoshi; and Shinbashi, Sueo, 4,226,491, Cl. 339-17.0LM.

Fukaya, Hirokazu; and Kishi, Jun, to Nippon Electric Co., Ltd. Motor speed control circuit having improved starting characteristics. 4,227,127, Cl. 318-317.000.

Fukuda, Heijiro. Method of continuously producing resinoid abrasive wheels for cutting hard materials. 4,226,602, Cl. 51-296.000.

Fukuda, Hiroya: *See*—
Yukuta, Toshio; Fukuda, Hiroya; Ishii, Seiji; and Utsumi, Kazuo, 4,226,947, Cl. 521-107.000.

Fukuda, Kumio: *See*—
Shimoma, Taketoshi; and Fukuda, Kumio, 4,226,513, Cl. 354-1.000.

Furness, Kenneth M.; Quinonez, Manuel; and Low, Stanley T., to Anaconda Company, The. Thickener control system. 4,226,714, Cl. 210-723.000.

Furukawa Electric Co., Ltd., The: *See*—
Sasaki, Takashi; Hagiwara, Miyuki; Araki, Kunio; Ishitani, Hayao; Saito, Eisuke; and Komatsu, Kyozi, 4,226,687, Cl. 204-159.130.

Furukawa, Masahiro; and Yamane, Tamotsu, to Hitachi, Ltd. Multitubular heat exchanger. 4,226,283, Cl. 165-114.000.

Furukawa Metals Co., Ltd.: *See*—
Osugi, Kozo, 4,226,278, Cl. 164-449.000.

Furuya, Katsuhiko: *See*—
Tamori, Michitoshi; Furuya, Katsuhiko; Yanagidaira, Hidetaka; and Sakaki, Hiroshi, 4,227,160, Cl. 333-18.000.

Fuschetto, Anthony N., to Perkin-Elmer Corporation, The. Three actuator deformable specimen. 4,226,507, Cl. 350-295.000.

Fusee, Murray C., to W. R. Grace & Co. Enzymatic diagnostic composition. 4,226,935, Cl. 435-14.000.

Fussner, Richard F.: *See*—
Littley, John J.; Koors, Carl W.; Fussner, Richard F.; and Lengel, Frank, 4,226,151, Cl. 83-479.000.

Gaasenbeek, Johannes L. Self-propelled vehicle. 4,226,140, Cl. 74-690.000.

Gager, Lawrence J., Jr. Windshield mounting assembly. 4,226,463, Cl. 296-78.100.

Galileo Electro-Optics Corp.: *See*—
Kurz, Edward A., 4,227,087, Cl. 250-397.000.

Gandy Frictions Limited: *See*—
Sumira, Arthur, 4,226,758, Cl. 260-38.000.

Ganellin, Charo R.: *See*—
Durant, Graham J.; Emmett, John C.; and Ganellin, Charo R., 4,226,874, Cl. 424-269.000.

Garcia, Alfred B.: *See*—
Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., 4,226,936, Cl. 435-55.000.

Garcia, Francisco E., to Patentes FAC, S.A. Padlock. 4,226,099, Cl. 70-41.000.

Gardner, James J.; and Koppehele, Hugh P., to Nordson Corporation. Hot melt dispenser. 4,227,069, Cl. 219-421.000.

Garfinkel, Marvin: *See*—
Brown, Dale M.; Garfinkel, Marvin; and Laurent, John A., 4,227,098, Cl. 307-311.000.

Garlock Inc.: *See*—
Messenger, Edward J., 4,226,426, Cl. 277-37.000.

Gates, William E.: *See*—
Pieters, Wim J. M.; Gates, William E.; and Wenger, Franz, 4,226,812, Cl. 570-157.000.
Gavin, David F.: *See*—
Scardera, Michael; and Gavin, David F., 4,226,794, Cl. 556-443.000.
Gavrilenko, Alexandr F.: *See*—
Frolov, Jury F.; Piljukov, Jury F.; Cherednichenko, Vladimir S.; Orlov, Gennady I.; Kurapin, Igor N.; Shabalina, Roza I.; Lakernik, Mark M.; Gavrilenko, Alexandr F.; Yakovenko, Anatoly A.; Elkina, Alla K.; Golovachev, Anatoly I.; Egorova, Tatyana S.; Vlasov, Jury M.; Smelyansky, Matvei Y., deceased; and Zelichenko, Faina S., administator, 4,226,406, Cl. 266-148.000.
Gawrilow, Ilija, to SCM Corporation. Hydrated stable fluent shortening containing solid phase emulsifier components. 4,226,894, Cl. 426-606.000.
Gay, John W., to Phillips Petroleum Company. Fabric unrolling device. 4,226,380, Cl. 242-55.000.
Gay, Walter A.: *See*—
Katz, Lawrence E.; Gay, Walter A.; and Schroeder, Hansjuergen A., 4,226,609, Cl. 71-64.00F.
Gebr. Happich GmbH: *See*—
Janz, Joachim; and Mentzel, Bodo, 4,226,464, Cl. 296-153.000.
Gebruder Buhler AG: *See*—
Grobli, Werner; and Zimmermann, Peter, 4,226,578, Cl. 425-186.000.
Gehrlein, Rolf: *See*—
Peter, Richard; Kirner, Hans D.; and Gehrlein, Rolf, 4,226,596, Cl. 8-532.000.
Geissler, Hans-Juergen; Mueller, Peter; Oppelt, Manfred; Schoener, Horst; and Stuetzer, Franz A., to Rowenta-Werke, GmbH. Hot-air grills. 4,226,178, Cl. 99-447.000.
Geisthoff, Hubert, to Jean Walterscheid GmbH. Torque limiting clutch assembly with freewheeling action. 4,226,316, Cl. 192-56.00R.
General Dynamics Corporation Electronics Division: *See*—
Thiel, Ronald A.; and Maurer, Edward H., 4,226,899, Cl. 427-101.000.
General Dynamics Corporation Pomona Division: *See*—
Healy, Roberto W., 4,226,392, Cl. 248-178.000.
General Electric Company: *See*—
Ballard, James L., 4,226,327, Cl. 206-320.000.
Brown, Dale M.; Garfinkel, Marvin; and Laurent, John A., 4,227,098, Cl. 307-311.000.
Cooper, Glenn D.; Haaf, William R.; and Vaughn, Howard A., Jr., 4,226,761, Cl. 260-42.180.
Espelage, Paul M.; and Walker, Loren H., 4,227,138, Cl. 318-802.000.
Fancy, Thomas A.; and Behringer, Donald F., 4,227,072, Cl. 235-92.0CA.
Gottung, William H.; and Torossian, Kevork A., 4,226,903, Cl. 428-195.000.
Holub, Fred F.; and Wilson, Phillip S., 4,226,950, Cl. 525-67.000.
Humes, Calvin, Jr.; Miller, Sammy L.; and Kindig, Alan L., 4,227,103, Cl. 310-71.000.
Jenkins, Thomas E.; Hahn, Thomas M.; and Cushing, Donald S., 4,226,490, Cl. 312-331.000.
Komanduri, Rangachary; and Reed, William R., Jr., 4,226,055, Cl. 51-325.000.
Luborsky, Fred E., 4,227,120, Cl. 315-248.000.
Morey, Everett D., 4,225,992, Cl. 8-158.000.
Motz, Gary S., 4,226,961, Cl. 525-439.000.
Payne, Thomas R.; and Hurko, Bohdan, 4,227,062, Cl. 219-10.55B.
Perry, Fred G., 4,227,179, Cl. 340-147.0LP.
Polonsky, Samuel; and Pomponio, Edward V., 4,226,497, Cl. 339-184.00M.
Sherinski, Lawrence R., 4,227,083, Cl. 250-343.000.
Snowman, Lawrence R., 4,226,533, Cl. 356-338.000.
White, Dwain M., 4,226,951, Cl. 525-92.000.
General Electric Company Limited, The: *See*—
Britton, John, 4,227,118, Cl. 315-101.000.
General Motors Corporation: *See*—
Spears, Esten W., Jr., 4,226,084, Cl. 60-262.000.
Genese, Joseph N., to Abbott Laboratories. Prefilled, vented two-compartment syringe. 4,226,236, Cl. 128-218.00M.
Genev, Ivan V.; Konstantinov, Mihail; Valchev, Alexander; and Peev, Vassil, to DSO "Cherna Metalurgia". Apparatus for applying protective coatings to graphite bodies. 4,226,207, Cl. 118-620.000.
Georgiev, Assen P.: *See*—
Nikolov, Ivan D.; Minchev, Pavel M.; Dimitrov, Marin A.; Georgiev, Assen P.; and Chorbov, Iliya G., 4,227,033, Cl. 13-27.000.
Gerard, Rene; and Lacombat, Michel, to Thomson-CSF. Wafer loading and positioning device. 4,226,569, Cl. 414-737.000.
Gergaud, Claude J.; Grimanelli, Etienne; and Tracol, Andre G., to International Business Machines Corporation. Decentralized data transmission system. 4,227,178, Cl. 340-147.00R.
Gerkin, Richard M.: *See*—
Critchfield, Frank E.; Gerkin, Richard M.; and Hawker, Leslie E., 4,226,756, Cl. 260-33.20R.
Gervais, Theodore; and McCole, Thomas P., to Polaroid Corporation. Self-developing film pack with improved spread control structure. 4,226,519, Cl. 354-174.000.
GESTRA-KSB Vertriebsgesellschaft mbH & Co. KG: *See*—
Foller, Werner, 4,226,362, Cl. 236-58.000.
Ghanashyamkulkarni, Suhas: *See*—
Bonikowski, Zbigniew; Ghanashyamkulkarni, Suhas; and Briant, Anthony A., 4,227,145, Cl. 324-51.000.
Giannini, Umberto; Cassata, Antonio; Longi, Paolo; and Mazzocchi, Romano, to Montedison S.p.A. Process for the stereoregular polymerization of alpha-olephins. 4,226,963, Cl. 526-114.000.
Gilbert, James K. Animal trap stake. 4,226,042, Cl. 43-96.000.
Gill, John F. Wire stripper. 4,226,145, Cl. 81-9.50R.
Gilliatt, Charles L.: *See*—
Edgar, Richard H.; Eves, E. Eugene, II; and Gilliatt, Charles L., 4,227,063, Cl. 219-10.55A.
Gilman, Paul B., Jr.: *See*—
Zigman, Seymour; and Gilman, Paul B., Jr., 4,226,868, Cl. 424-258.000.
Gilmer, John L., to Bell Telephone Laboratories, Incorporated. Digital constant-percent break pulse corrector. 4,227,054, Cl. 179-16.0EA.
Gindel, Alvin, to Alsy Manufacturing Inc. Shelf assembly. 4,226,193, Cl. 108-111.000.
Gingras, Hilaire. Safety latch. 4,226,451, Cl. 292-169.210.
Ginschel, Klaus: *See*—
Feldkamper, Richard; and Ginschel, Klaus, 4,226,149, Cl. 83-305.000.
Giroux, Eugene L.; Prakash, Nellikunja J.; and Schechter, Paul J., to Merrell Toraude et Compagnie. Use of α,α'-dithiobis-(β-arylacrylic acid) derivatives in the treatment of hypertension. 4,226,882, Cl. 424-285.000.
GKN-Stenman AB: *See*—
Tranberg, Erik R.; and Widen, Bo G., 4,226,454, Cl. 292-336.500.
Glasgow, Luther E. Crust forming device. 4,226,579, Cl. 425-218.000.
Glassow, Franklyn A.; and Cunningham, Arthur C., to Hughes Aircraft Company. Bearing retainer. 4,226,484, Cl. 308-201.000.
Glaum, Rolf: *See*—
Mende, Hanns; Beuler, Helmut; and Glaum, Rolf, 4,226,678, Cl. 202-161.000.
Glynwed Group Services Limited: *See*—
Corbett, Aubrey E.; Ho, Siu L.; and Clark, Ronald J., 4,225,989, Cl. 5-453.000.
Godard, Dominique N.; and Thirion, Philippe E., to International Business Machines Corporation. Method and device for training an adaptive equalizer by means of an unknown data signal in a quadrature amplitude modulation transmission system. 4,227,152, Cl. 375-13.000.
Godard, Dominique N., to International Business Machines Corporation. Method and device for acquiring the initial phase of the clock in a synchronous data receiver. 4,227,252, Cl. 375-113.000.
Goetsch, Elmer A. Accordion support apparatus. 4,226,161, Cl. 84-376.00A.
Goettl Air Conditioning, Inc.: *See*—
Riley, James P., 4,226,058, Cl. 52-27.000.
Goi, Hitoshi; Miyado, Shinji; Shomura, Takashi; Suzuki, Akira; Niwa, Tomizo; and Yamada, Yujiro, to Meiji Seika Kaisha, Ltd. Process for the optical resolution of d,l-2-amino-4-methylphosphinobutyric acid. 4,226,941, Cl. 435-280.000.
Gold, Marvin H. High voltage cable splicing - additive reaction. 4,226,651, Cl. 156-48.000.
Goldberg, Bruce S.; and Shah, Mahendra, to Amerace Corporation. Flexible, microporous rubber base articles. 4,226,926, Cl. 429-252.000.
Goldberg, Jack M. Diagnostic agents. 4,226,713, Cl. 23-230.00B.
Goldman, Harley R.; and Hall, Stewart. Variable volume control for toilet flush tanks. 4,225,987, Cl. 4-325.000.
Golovachev, Anatoly I.: *See*—
Frolov, Jury F.; Piljukov, Jury F.; Cherednichenko, Vladimir S.; Orlov, Gennady I.; Kurapin, Igor N.; Shabalina, Roza I.; Lakernik, Mark M.; Gavrilenko, Alexandr F.; Yakovenko, Anatoly A.; Elkina, Alla K.; Golovachev, Anatoly I.; Egorova, Tatyana S.; Vlasov, Jury M.; Smelyansky, Matvei Y., deceased; and Zelichenko, Faina S., administator, 4,226,406, Cl. 266-148.000.
Gomi, Hiroshi, to Tokyo Shibaura Electric Co., Ltd. Hue and saturation control circuitry requiring single coupling capacitor. 4,227,205, Cl. 358-28.000.
Gomola, John W.: *See*—
Edblad, Warren A.; Gomola, John W.; Wallace, Frank E.; Wood, William G.; and Jones, F. David, 4,227,245, Cl. 364-468.000.
Gonsalves, Anthony W.: *See*—
Nardella, Paul C.; Feeney, Joseph D.; Wrublewski, Thomas A.; and Gonsalves, Anthony W., 4,227,140, Cl. 320-2.000.
Goode, Jonathan M., to United States of America, Air Force. Clutch protection circuit. 4,227,232, Cl. 361-191.000.
Goodhart, Frank W.: *See*—
Butler, James R.; Turner, James E.; and Goodhart, Frank W., 4,226,599, Cl. 23-230.00B.
Goodman, Donald; Koral, Marvin; Miller, Robert S.; and Stanaback, Robert J., to Tenneco Chemicals, Inc. Process for the removal of vinyl chloride from polyvinyl chloride latexes and slurries. 4,226,974, Cl. 528-483.000.
Goodman, Donald; Koral, Marvin; Miller, Robert S.; and Stanaback, Robert J., to Tenneco Chemicals, Inc. Process for the removal of vinyl chloride from polyvinyl chloride dispersions and latexes. 4,226,975, Cl. 528-483.000.
Goodman, Donald; Koral, Marvin; Miller, Robert S.; and Stanaback, Robert J., to Tenneco Chemicals, Inc. Process for the removal of vinyl chloride from polyvinyl chloride latexes and slurries with hydrocarbon compounds. 4,226,976, Cl. 528-498.000.
Goodman Equipment Corporation: *See*—
Watkins, Charles L., 4,226,326, Cl. 198-758.000.
Goodwin, Charles A.; and Ota, Yusuke, to Bell Telephone Laboratories, Incorporated. Method of making a hyperabrupt varactor diode utilizing molecular beam epitaxy. 4,226,648, Cl. 148-175.000.

Goodworth, William H. Prepackaged ammunition system. 4,226,041, Cl. 42-50.000.

Goodyear Tire & Rubber Company, The: *See—*
Appleby, Paul E.; Folden, Denver C.; Stalter, Joseph F., Jr.; and Swanson, Harry R., 4,226,656, Cl. 156-132.000.
Long, Barry W.; and Rye, Grover W., 4,226,273, Cl. 152-326.000.

Gordon, Geoffrey W. Player latching and unlatching mechanism for video disc holder. 4,226,424, Cl. 274-9.00B.

Gordon, James W.: *See—*
Fairchild, Jack R.; Lagowski, Joseph V.; and Gordon, James W., 4,226,476, Cl. 299-31.000.

Goto, Eizo: *See—*
Washizu, Teruo; and Goto, Eizo, 4,227,108, Cl. 310-214.000.

Gottung, William H.; and Torossian, Kevork A., to General Electric Company. Electrical insulating sheet material and electrical winding made therefrom. 4,226,903, Cl. 428-195.000.

Gould Inc.: *See—*
Knapp, Edward J., Jr., 4,227,168, Cl. 337-161.000.
Kozacka, Frederick J.; and Wilks, Howard G., 4,227,167, Cl. 337-161.000.

Grabmaier, Christa: *See—*
Thomann, Helmut; and Grabmaier, Christa, 4,227,084, Cl. 250-370.000.

Graham, Charles D., Jr.: *See—*
Hatta, Shinichiro; Egami, Takeshi; and Graham, Charles D., Jr., 4,226,619, Cl. 75-123.00K.

Grahn, Donald T. Method of identifying a thief and stolen articles. 4,226,194, Cl. 109-25.000.

Graven, Richard G.; and Sailor, Robert A., to Mobil Oil Corporation. Temporary shutdown of co-combustion devices. 4,226,701, Cl. 208-121.000.

Gravert, William H., to Marine Moisture Control Company, Inc. Portable device for determining physical qualities of pressurized container contents. 4,226,023, Cl. 33-126.500.

Graves, Daniel F.: *See—*
Fieldhouse, John W.; and Graves, Daniel F., 4,226,840, Cl. 423-300.000.

Great Lakes Biochemical Co., Inc.: *See—*
Storrs, Arnold B., 4,226,940, Cl. 435-260.000.

Greer, William B.: *See—*
Off, Joseph W. A.; Early, Judson H.; and Greer, William B., 4,226,661, Cl. 156-358.000.

Griffith, Gary L.; and Sharma, Nawal K., to Bell Telephone Laboratories, Incorporated. Method for bonding flexible printed circuitry to rigid support plane. 4,226,659, Cl. 156-305.000.

Griffith, James R.: *See—*
Keller, Teddy M.; and Griffith, James R., 4,226,801, Cl. 260-465.00F.

Grigorenko, Georgy M.: *See—*
Paton, Boris E.; Latash, Jury V.; Grigorenko, Georgy M.; Lisovoi, Jury V.; Stepanenko, Viktor V.; and Asoiants, Grigory B., 4,227,031, Cl. 13-18.00A.

Grigoriev, Vasily A.; Arkhipova, Zinaida V.; Balaev, Gurgen A.; Bakajutov, Nikolai G.; Vysotskaya, Vera I.; Polyakov, Arkady V.; and Zapletnyak, Vitaly M. Method for preparing polymers and copolymers of higher α-olefines. 4,226,965, Cl. 526-116.000.

Grimanelli, Etienne: *See—*
Gergaud, Claude J.; Grimanelli, Etienne; and Tracol, Andre G., 4,227,178, Cl. 340-147.00R.

Grimes, Robert E.: *See—*
Carrick, Robert L.; Manning, William T.; and Grimes, Robert E., 4,227,255, Cl. 455-226.000.

Grinberg, Jan; Waldner, Michael; and Jenney, Joe A., to Hughes Aircraft Company. CCD Readout structure for display applications. 4,227,201, Cl. 357-24.000.

Griset, Ernest J., Jr., to Akzona Incorporated. Apparatus and process for producing a covered elastic composite yarn. 4,226,076, Cl. 57-12.000.

Grob, Ferdinand: *See—*
Rembold, Helmut; Linder, Ernst; and Grob, Ferdinand, 4,226,295, Cl. 180-335.000.

Grobli, Werner; and Zimmermann, Peter, to Gebruder Buhler AG. Pellet mill. 4,226,578, Cl. 425-186.000.

Gross, William G.; and Hutchinson, Robert H., to Armstrong Cork Company. Method of forming a textured fiberboard. 4,226,674, Cl. 162-109.000.

Grosskinsky, Otto-Alfred; Petri, Norbert; Hein, Johannes; and Leitner, Hans, to BASF Aktiengesellschaft. Production of adipic acid from acidic wash waters. 4,227,021, Cl. 562-513.000.

Grothaus, Joseph V.: *See—*
Delcorio, Guy A.; and Grothaus, Joseph V., 4,226,625, Cl. 106-38.220.

Grubbs, Michael R.: *See—*
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Grudzinskas, Charles V.: *See—*
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Grzymek, Anna D.: *See—*
Kapolyi, Laszlo; Szentgyorgyi, Geza; Vamos, Gyorgy; Grzymek, Jerzy; Grzymek, Anna D.; Bethke, Stanislaw; and Werynski, Bronislaw, 4,226,632, Cl. 106-100.000.

Grzymek, Jerzy: *See—*
Kapolyi, Laszlo; Szentgyorgyi, Geza; Vamos, Gyorgy; Grzymek, Jerzy; Grzymek, Anna D.; Bethke, Stanislaw; and Werynski, Bronislaw, 4,226,632, Cl. 106-100.000.

GTE Automatic Electric Laboratories Incorporated: *See—*
Ferraris, Giampiero, 4,226,932, Cl. 430-312.000.

GTE Products Corporation: *See—*
Painter, Howard S., 4,226,583, Cl. 431-362.000.
Shaffer, John W.; and Armstrong, Donald E., 4,227,240, Cl. 362-13.000.

Guigan, Jean. Process and device for dispensing a predetermined amount of a liquid substance into a vessel. 4,226,266, Cl. 141-11.000.

Gulf Oil Corporation: *See—*
Kirkpatrick, Joel L.; and Doyle, William C., Jr., 4,226,873, Cl. 424-269.000.

Gulf & Western Corporation: *See—*
Logan, David J.; and Pavone, Robert J., 4,226,148, Cl. 83-71.000.

Gulf & Western Manufacturing Company: *See—*
Layton, Paul L., 4,227,037, Cl. 174-35.0MS.

Gunderson, Arthur M., to RescueTech Corporation. Respiratory valve face mask structure. 4,226,234, Cl. 128-205.240.

Gunderson, Arthur M.: *See—*
McGuire, Kevin C., 4,226,029, Cl. 35-26.000.

Gunther, Rush B.: *See—*
Jones, William R.; and Gunther, Rush B., 4,227,032, Cl. 13-20.000.

Gunzler, Thomas. Self-contained solar tracking device. 4,226,502, Cl. 350-83.000.

Gurien, Harvey; and Teitel, Sidney, to Hoffmann-La Roche Inc. Carbazole melonates. 4,226,774, Cl. 260-315.000.

Gurley, Thomas M.; Hopkins, Robert S., Jr.; and Fischer, Wolf-Dieter, to RCA Corporation. Television picture positioning apparatus. 4,227,215, Cl. 358-160.000.

Gurwicz, David; and Pacey, Keith, to Chloride Group Limited. Converters. 4,227,243, Cl. 363-132.000.

Gustafson, Gary A.: *See—*
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Guthrie, David B.: *See—*
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Gutierrez, Eddie N., to Lever Brothers Company. 1,1,2,3-Propane tetracarboxylic acid compounds. 4,226,781, Cl. 260-346.740.

H. J. Langen & Sons Ltd.: *See—*
Langen, Marinus J. M.; and Strauss, Edgar H., 4,226,172, Cl. 93-35.0SB.

Ha-Pham, Pascal, to Regie Nationale des Usines Renault. Device for lever operation of the air conditioning controls of an automobile. 4,226,138, Cl. 74-471.00R.

Haaf, William R.: *See—*
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Haag, Charles W., to Whirlpool Corporation. Door seal assembly. 4,226,489, Cl. 312-296.000.

Haas, Howard C.; and Moreau, Robert D., to Polaroid Corporation. Process for preparing polyfunctional compounds. 4,227,013, Cl. 560-190.000.

Habermeier, Jurgen: *See—*
Batzer, Hans; Habermeier, Jurgen; and Porret, Daniel, 4,227,005, Cl. 548-312.000.

Hagedorn, Fritz, to Kali-Chemie Aktiengesellschaft. Method and apparatus for analysis of substances by change in enthalpy during dissolution. 4,226,114, Cl. 73-61.00R.

Haggar Company: *See—*
Off, Joseph W. A.; Early, Judson H.; and Greer, William B., 4,226,661, Cl. 156-358.000.

Haggard, Richard A.: *See—*
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Hagiwara, Miyuki: *See—*
Sasaki, Takashi; Hagiwara, Miyuki; Araki, Kunio; Ishitani, Hayao; Saito, Eisuke; and Komatsu, Kyozi, 4,226,687, Cl. 204-159.130.

Hahn, Thomas M.: *See—*
Jenkins, Thomas E.; Hahn, Thomas M.; and Cushing, Donald S., 4,226,490, Cl. 312-331.000.

Hakodate Seimo Sengu Co., Ltd.: *See—*
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Halasa, Adel F.; Carlson, David W.; and Hall, James E., to Firestone Tire & Rubber Company, The. Thermoplastic elastomer blends of alpha-olefin polymers and hydrogenated medium and high vinyl butadiene polymers. 4,226,952, Cl. 525-192.000.

Hall, James E.: *See—*
Halasa, Adel F.; Carlson, David W.; and Hall, James E., 4,226,952, Cl. 525-192.000.

Hall, John N., to Hercules Incorporated. Process for producing a reticulated web net. 4,226,828, Cl. 264-555.000.

Hall, Stewart: *See—*
Goldman, Harley R.; and Hall, Stewart, 4,225,987, Cl. 4-325.000.

Hallam, Dennis M., to E. Sachs & Co. Ltd. Fascia gutter. 4,226,056, Cl. 52-11.000.

Hamada, Toshimitsu: *See—*
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Hamashima, Yoshio: *See—*
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Hamman, Lyle J., to Eaton Stamping. Electric motor drive unit. 4,227,104, Cl. 310-75.00R.

Hammond, R. Philip: *See*—
Latter, Albert L.; Hammond, R. Philip; and Dooley, James L., 4,226,294, Cl. 180-54.00B.
Hampton, Marshall D.; and Spangler, Edwin L., Jr., to Hampton, said Marshall D., by said Edwin L. Spangler, Jr. Waterproof padlock case. 4,226,100, Cl. 70-51.000.
Hampton, said Marshall D.: *See*—
Hampton, Marshall D.; and Spangler, Edwin L., Jr. (said Edwin L. Spangler, Jr. assors. to), 4,226,100, Cl. 70-51.000.
Handte, Reinhard: *See*—
Koch, Manfred; Handte, Reinhard; Horlein, Gerhard; Leditschke, Heinrich; Kocher, Helmut; and Langeluddeke, Peter, 4,227,009, Cl. 560-61.000.
Haner, Lambert, to Acme-Cleveland Corporation. Spindle rotator. 4,227,134, Cl. 318-685.000.
Hanke, Merlin S. Adjustable pulley construction. 4,226,133, Cl. 474-42.000.
Hanna, Arthur W. Multiple clamp and indexable anvil therefor. 4,226,409, Cl. 269-41.000.
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Hansen, James E.; and Lorenz, Willard S., to Eaton Corporation. Integral relay low voltage retentive means. 4,227,231, Cl. 361-154.000.
Hansen, Lawrence F., to Alphadyne, Inc. Acoustical panel. 4,226,299, Cl. 181-284.000.
Hansen, Peder M., to United States of America, Navy. Injected coded reference for adaptive array systems. 4,227,249, Cl. 375-34.000.
Hansen, Richard L.: *See*—
Dahlen, Richard R.; Hansen, Richard L.; and Weiher, Richard L., 4,226,910, Cl. 428-336.000.
Hanson, Robert L., to Bell Telephone Laboratories, Incorporated. Multifrequency receiver. 4,227,055, Cl. 179-84.0VF.
Harada, Tatsuo: *See*—
Hiraga, Kunikazu; Shibayama, Shoichi; Yanai, Isao; and Harada, Tatsuo, 4,226,616, Cl. 71-124.000.
Harada, Yoshitsugu: *See*—
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Harbourne, David A., to Du Pont Canada Inc. Manufacture of film from partially crosslinked polyethylene. 4,226,905, Cl. 428-220.000.
Hardiman, Russell J., to SPS Technologies, Inc. Hand operated yield tightening system. 4,226,127, Cl. 73-761.000.
Hardinge Brothers, Inc.: *See*—
Peris, John M., 4,226,322, Cl. 192-135.000.
Haren, Doyle V., to Dayco Corporation. Microporous elastomeric material and method of manufacture. 4,226,911, Cl. 428-375.000.
Harris, John F.: *See*—
Hauser, Ray L.; and Harris, John F., 4,226,247, Cl. 128-641.000.
Harrison, Benjamin C.: *See*—
Kindrick, Robert H.; and Harrison, Benjamin C., 4,226,635, Cl. 106-306.000.
Harrison, Norman: *See*—
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Hartl, Paul: *See*—
Meiller, Hermann; Hocke, Horst; Kunst, Otto; and Hartl, Paul, 4,226,385, Cl. 242-107.40R.
Hartman Metal Fabricators, Inc.: *See*—
Hartman, Peter W., 4,227,137, Cl. 318-801.000.
Hartman, Peter W., to Hartman Metal Fabricators, Inc. Digital tach and slip signal motor control. 4,227,137, Cl. 318-801.000.
Haruna, Tohru: *See*—
Nakahara, Yutaka; Haruna, Tohru; and Tazima, Kenji, 4,226,991, Cl. 544-221.000.
Harupa, Gerhard, to U.S. Philips Corporation. Solar collector. 4,226,227, Cl. 126-442.000.
Hasegawa, Seiji: *See*—
Miyata, Katsuharu; Aiga, Makoto; and Hasegawa, Seiji, 4,227,008, Cl. 560-25.000.
Hashimoto, Makoto, to Ricoh Company, Ltd. Magnetic brush development apparatus for an electrostatic copier. 4,226,524, Cl. 355-3.0DD.
Hashimoto, Shigeru; Masuda, Akira; Mochizuki, Katura; Satoh, Akira; Takeuchi, Koshi; and Oda, Teruhisa, to Canon Kabushiki Kaisha. Holding device for a lens of an interchangeable lens assembly. 4,226,505, Cl. 350-252.000.
Haslbeck, Peter; and Kocherscheidt, Hans, to Bayerische Motoren Werke Aktiengesellschaft. Internal combustion engine with sound-insulating capsule and water radiator arranged outside the capsule. 4,226,217, Cl. 123-41.620.
Hatch Associates Ltd.: *See*—
McCaffrey, Felim P., 4,226,332, Cl. 212-218.000.
Hatfield, Lowell D.; Blaszczak, Larry C.; and Fisher, Jack W., to Eli Lilly and Company. Process for halogenation of β-lactam compounds. 4,226,986, Cl. 544-16.000.
Hatta, Shinichiro; Egami, Takeshi; and Graham, Charles D., Jr., to Electric Power Research Institute, Inc. Amorphous alloy with high magnetic induction at room temperature. 4,226,619, Cl. 75-123.00K.
Hattori, Mitsuhiro: *See*—
Nakayama, Shozo; Hattori, Mitsuhiro; and Ono, Makoto, 4,226,572, Cl. 417-269.000.
Hauff, Werner. Watertight wall feedthrough for electrical ground. 4,226,498, Cl. 339-205.000.
Hauser Laboratories: *See*—
Hauser, Ray L.; and Harris, John F., 4,226,247, Cl. 128-641.000.
Hauser, Ray L.; and Harris, John F., to Hauser Laboratories. Biological electrode. 4,226,247, Cl. 128-641.000.
Haviv, Fortuna; and Patchornik, Abraham, to Yeda Research and Development Co. Ltd. 7-[(Sulfomethyl)phenyl]acetamidocephalosporin derivatives. 4,226,806, Cl. 260-507.00R.
Hawker, Leslie E.: *See*—
Critchfield, Frank E.; Gerkin, Richard M.; and Hawker, Leslie E., 4,226,756, Cl. 260-33.20R.
Hawley, Wilbur W., to Atlantic Richfield Company. Solar panel assembly and support pad. 4,226,256, Cl. 136-244.000.
Haworth, John Brian: *See*—
Jacob, Ezekiel J., 4,226,906, Cl. 428-283.000.
Hay, Donald A., deceased (by Hay, Robert D., personal representative). Circular lifeboat. 4,225,993, Cl. 9-4.00R.
Hay, Robert D., personal representative: *See*—
Hay, Donald A., deceased, 4,225,993, Cl. 9-4.00R.
Hayashi, Sadao: *See*—
Narisada, Masayuki; Tsuji, Teruji; Yoshioka, Mitsuru; Hiromu, Matsumura; Hamashima, Yoshio; Hayashi, Sadao; and Nagata, Wataru, 4,226,864, Cl. 424-248.500.
Hayden, Percy; Clayton, Richard W.; and Cope, Alan F. G., to Imperial Chemical Industries Limited. Production of alkylene oxides and catalysts thereof. 4,226,782, Cl. 260-348.340.
Hayes, Thomas H., to Ethyl Corporation. Squeeze bottle dispenser. 4,226,367, Cl. 239-327.000.
Haynes, Gardner S.: *See*—
Baboian, Robert; Haynes, Gardner S.; and Delagi, Richard G., 4,226,694, Cl. 204-196.000.
Health-Mor Inc.: *See*—
Martinec, Eugene F.; and Robinson, Nora, 4,225,999, Cl. 15-300.00A.
Healy, Roberto W., to General Dynamics Corporation Pomona Division. Three dimensional fine focus detector mount. 4,226,392, Cl. 248-178.000.
Heberlein Maschinenfabrik AG: *See*—
Luthi, Walter, 4,226,092, Cl. 62-374.000.
Hedstrom Co.: *See*—
Boudreau, Robert J., 4,226,467, Cl. 297-5.000.
Heidrich, Jochen: *See*—
Linden, Heinrich; Heidrich, Jochen; Wegemund, Bernd; and Bornmann, Hans, 4,226,637, Cl. 106-308.00Q.
Hein, Johannes: *See*—
Grosskinsky, Otto-Alfred; Petri, Norbert; Hein, Johannes; and Leitner, Hans, 4,227,021, Cl. 562-513.000.
Heitmann, Knut; Schneider, Eckart; and Lussem, Heribert, to Ernst Leitz Wetzlar GmbH. Object measuring method and apparatus. 4,226,535, Cl. 356-373.000.
Helesfai, Steven, to Miller, Harry C.; and Miller, Georgia R. Tool kit for attaching and removing spiral lock washers. 4,226,013, Cl. 29-235.000.
Helfrich, Fred H., Jr., to Madden, Thomas P., a part interest. Ice cream holder. 4,226,355, Cl. 229-1.50H.
Hellemans, Julianus J.: *See*—
Plessers, Hendrik S.; and Hellemans, Julianus J., 4,227,089, Cl. 250-468.000.
Hellouin de Cenival, Bruno; and Moulene, Jean-Louis, to Societe Anonyme Francaise du Ferodo. Liner for a perforate plate of a header tank of a heat exchanger having tubes. 4,226,280, Cl. 165-69.000.
Henderson, Don J., to Exxon Research & Engineering Co. Polyparabanic acid/copper foil laminates obtained by direct solution casting. 4,226,913, Cl. 428-421.000.
Henderson, George H. Gun barrel lock. 4,226,399, Cl. 248-553.000.
Henderson, Harvey. Worm drive mechanism. 4,226,129, Cl. 74-89.150.
Hendricks, Howard F.: *See*—
Malakian, Vahe H.; and Hendricks, Howard F., 4,227,101, Cl. 310-49.00R.
Henkel Kommanditgesellschaft auf Aktien: *See*—
Bucken, Hans J.; and Horskorte, Helmut, 4,226,945, Cl. 521-92.000.
Linden, Heinrich; Heidrich, Jochen; Wegemund, Bernd; and Bornmann, Hans, 4,226,637, Cl. 106-308.00Q.
Rose, David; Lieske, Edgar; and Busch, Peter, 4,226,595, Cl. 8-406.000.
Hennequin, Petrus J., to Hunter Douglas International N.V. Locking device for raisable venetian blind. 4,226,455, Cl. 292-345.000.
Henrick, Clive A., to Zoecon Corporation. Pyridyl esters of α-substituted amino acids. 4,226,872, Cl. 424-263.000.
Herchenbach, Horst: *See*—
Brachthauser, Kunibert; and Herchenbach, Horst, 4,226,586, Cl. 432-106.000.
Hercofina: *See*—
Hood, Horace E., 4,227,010, Cl. 560-77.000.
Hercules Incorporated: *See*—
Hall, John N., 4,226,828, Cl. 264-555.000.
Herden, Werner, to Robert Bosch GmbH. Mechanical displacement-electrical signal transducer. 4,226,126, Cl. 73-728.000.
Herman, Elvin E.; and Williams, Frederick C., to Hughes Aircraft Company. Synthetic array processor. 4,227,194, Cl. 343-5.0CM.
Herman, Emmanuel; Diery, Helmut; Soreau, Michel; and Christidis, Yani, to Hoechst France. Process for manufacturing α-chloroarylacetic acids. 4,227,016, Cl. 562-465.000.
Hermann Hirsch Leder- und Kunststoffwarenfabrik: *See*—
Hirsch, Hermann, 4,226,487, Cl. 312-42.000.

Hermann, Joachim, to Bolkow Gesellschaft mit beschrankter Haftung. Optical position determining or tracking device. 4,227,076, Cl. 250-203.00R.
Herro, Richard E. Golf shoe. 4,226,032, Cl. 36-127.000.
Herzl, Peter J., to Fischer & Porter Co. Vortex-shedding flowmeter having drag-actuated torsional sensor. 4,226,117, Cl. 73-861.220.
Hester, Jackson B., Jr., to Upjohn Company, The. 1-[(Dialkylamino)-methyl]-6-phenyl-4H-s-[4,3,-a][1,4]triazolobenzodiazepine N^1-oxide. 4,226,772, Cl. 260-245.500.
Hewlett-Packard Company: *See*—
Dukes, John N.; Bryson, Charles E., III; and Weber, Lynn, 4,227,079, Cl. 250-231.0SE.
Hicap Engineering & Development Corporation: *See*—
Davis, William L., 4,226,830, Cl. 422-143.000.
Hieda, Ronald S.: *See*—
Awaya, Herbert Y.; and Hieda, Ronald S., 4,226,274, Cl. 152-330.00A.
Higaki, Kazuo, to Yamaha Hatsudoki Kabushiki Kaisha. Frame of motorcycles. 4,226,296, Cl. 180-219.000.
Hilbert, Richard G., to Leesona Corporation. Method and apparatus for manufacturing wrapped yarns. 4,226,077, Cl. 57-18.000.
Hildebolt, William M., to Campbell Soup Company. Protein texturization by centrifugal spinning. 4,226,576, Cl. 425-69.000.
Hill, Benjamin J.; and Wagnon, Norman L. Hand truck. 4,226,434, Cl. 280-47.210.
Hinds, Caryl E., to Bird & Son, Inc. Shingle simulating strip material. 4,226,069, Cl. 52-521.000.
Hintner, Josef: *See*—
Stable, Georg; and Hintner, Josef, 4,226,482, Cl. 303-82.000.
Hiraga, Kunikazu; Shibayama, Shoichi; Yanai, Isao; and Harada, Tatsuo, to Nihon Nohyaku Co., Ltd. Diphenyl ether and herbicide containing the same. 4,226,616, Cl. 71-124.000.
Hirai, Tadaaki: *See*—
Yamamoto, Hideaki; Matsumaru, Haruo; Matsui, Makoto; Tsukada, Toshihisa; Hirai, Tadaaki; and Maruyama, Eiichi, 4,227,078, Cl. 250-227.000.
Hiromu, Matsumura: *See*—
Narisada, Masayuki; Tsuji, Teruji; Yoshioka, Mitsuru; Hiromu, Matsumura; Hamashima, Yoshio; Hayashi, Sadao; and Nagata, Wataru, 4,226,864, Cl. 424-248.500.
Hirsch, Hermann, to Hermann Hirsch Leder- und Kunststoffwarenfabrik. Apparatus for the display and dispensing of merchandise. 4,226,487, Cl. 312-42.000.
Hisazumi, Nobuyuki: *See*—
Yoshikawa, Shinsuke; Hisazumi, Nobuyuki; and Yamamoto, Masataka, 4,226,822, Cl. 264-173.000.
Hitachi, Ltd.: *See*—
Furukawa, Masahiro; and Yamane, Tamotsu, 4,226,283, Cl. 165-114.000.
Kanazawa, Yasunori, 4,227,221, Cl. 360-32.000.
Nakagawa, Yasuo; Makihira, Hiroshi; and Hamada, Toshimitsu, 4,226,539, Cl. 356-445.000.
Nakajima, Akira; and Ichikawa, Akira, 4,227,046, Cl. 179-1.0SD.
Okura, Akimitsu; Saito, Syobu; and Ukiana, Motohide, 4,227,080, Cl. 250-311.000.
Tsukahara, Satoshi; Sato, Isao; Uchiyama, Yoshihiro; and Kusaba, Masanobu, 4,226,088, Cl. 60-752.000.
Tsuruoka, Masao; Yagi, Hideyuki; Morita, Keiichi; and Kuniya, Keiichi, 4,226,917, Cl. 428-111.000.
Yamamoto, Hideaki; Matsumaru, Haruo; Matsui, Makoto; Tsukada, Toshihisa; Hirai, Tadaaki; and Maruyama, Eiichi, 4,227,078, Cl. 250-227.000.
Ho, Siu L.: *See*—
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Hochiki Corporation: *See*—
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Hocke, Horst: *See*—
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Hodge, Philo B.: *See*—
Faure, Louis H.; and Hodge, Philo B., 4,227,149, Cl. 324-158.00P.
Hodge, Stephen L. Cable tester for locating shorts discontinuities and reversals in multi-conductor cables. 4,227,146, Cl. 324-51.000.
Hoechst Aktiengesellschaft: *See*—
Koch, Manfred; Handte, Reinhard; Horlein, Gerhard; Leditschke, Heinrich; Kocher, Helmut; and Langeluddeke, Peter, 4,227,009, Cl. 560-61.000.
Meidert, Helmut; Muller, Werner H.; and Pressler, Wilfried, 4,226,997, Cl. 546-157.000.
Oeding, Volker; Pfaff, Werner; Vertesy, Laszlo; and Weidenmuller, Hans-Ludwig, 4,226,764, Cl. 260-112.00R.
Hoechst France: *See*—
Herman, Emmanuel; Diery, Helmut; Soreau, Michel; and Christidis, Yani, 4,227,016, Cl. 562-465.000.
Hoff, Stephen J., to Hoffco, Inc. Shaft assembly for lawn trimmer. 4,226,021, Cl. 30-276.000.
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Hoff, Stephen J., 4,226,021, Cl. 30-276.000.
Hoffman, David S.: *See*—
Rogers, Walter C., Jr.; and Hoffman, David S., 4,226,469, Cl. 297-85.000.
Hoffman, Mark H., to SCI Systems, Inc. Printer control system. 4,226,546, Cl. 400-144.200.
Hoffman, Ronald R.; Payne, Rex E., Jr.; and Saint, David, to Port-A-Crib, Inc. Latch. 4,226,452, Cl. 292-175.000.
Hoffmann-La Roche Inc.: *See*—
Burkard, Willy; and Wyss, Pierre-Charles, 4,226,865, Cl. 424-248.500.
Gurien, Harvey; and Teitel, Sidney, 4,226,774, Cl. 260-315.000.
Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,226,985, Cl. 542-426.000.
Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,227,019, Cl. 562-503.000.
Roncari, Gaetano, 4,226,747, Cl. 260-8.000.
Rosenberger, Michael, 4,227,022, Cl. 568-591.000.
Walser, Armin, 4,226,768, Cl. 260-239.0DD.
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Hoffmann, Otto-Horst: *See*—
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Hoffmeister, Glenn: *See*—
Druss, Raymond, deceased; and Hoffmeister, Glenn, 4,227,106, Cl. 310-184.000.
Hofmann, Hans-Joachim, to Durr-Dental KG. Device in dental suction apparatus for connecting and holding suction nozzle tubes and/or for filtering. 4,226,590, Cl. 433-28.000.
Hoglan, Jack M.: *See*—
Eckhart, Thomas D.; Nelson, Richard L.; and Hoglan, Jack M., 4,226,229, Cl. 128-66.000.
Hokkai Can Co., Ltd.: *See*—
Takahashi, Yuzo; Maeda, Yoshinari; Tanaka, Yasuyuki; Nagai, Kastumi; and Oyama, Shiro, 4,226,201, Cl. 113-12.000.
Holdeman, Louis B.: *See*—
United States of America, National Aeronautics and Space Administration; Holdeman, Louis B.; Toots, Jaan; and Chang, Chu-Cheng, 4,227,096, Cl. 307-233.00R.
Holecek, Joseph J.; Plummer, William B.; Schwieters, Clarence R.; and Zell, Michael N., to International Business Machines Corporation. Blocker for magnetic diskette gripper. 4,226,570, Cl. 414-751.000.
Holiday, Paul R.: *See*—
Cox, Arthur R.; Bourdeau, Romeo G.; and Holiday, Paul R., 4,226,644, Cl. 148-2.000.
Holland, George W.; Jernow, Jane L.; and Rosen, Perry, to Hoffmann-La Roche Inc. 11-Substituted prostaglandins. 4,226,985, Cl. 542-426.000.
Holland, George W.; Jernow, Jane L.; and Rosen, Perry, to Hoffmann-La Roche Inc. 11-Substituted prostaglandins. 4,227,019, Cl. 562-503.000.
Holland, John M., to International Telephone and Telegraph Corporation. Multichannel fiber optic control system. 4,227,075, Cl. 370-4.000.
Hollandsche Beton Groep N.V.: *See*—
Jansz, Joost W., 4,226,287, Cl. 173-126.000.
Hollandse Signaalapparaten B.V.: *See*—
Langeraar, Huibert B., 4,227,196, Cl. 343-100.0CL.
Hollis, Lloyd L.: *See*—
Ehrsam, William F.; Elander, Robert C.; Hollis, Lloyd L.; Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Oseas, Jonathan; and Tuchman, Walter L., 4,227,253, Cl. 375-2.000.
Holub, Fred F.; and Wilson, Phillip S., to General Electric Company. Plasticized, impact modified polycarbonates. 4,226,950, Cl. 525-67.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Tomita, Takao; and Morita, Isamu, 4,226,408, Cl. 267-64.00B.
Honeywell Inc.: *See*—
Chelcun, Darrell; and Dressel, Lawrence J., 4,227,045, Cl. 178-66.100.
Schilling, Roger A., 4,226,581, Cl. 431-26.000.
Hood, Horace E., to Hercofina. Recovery of dimethyl terephthalate and intermediates from the tarry fraction of cooxidation process residue. 4,227,010, Cl. 560-77.000.
Hoos, Richard E. Roller skate wheel cleaning apparatus. 4,225,996, Cl. 15-97.00R.
Hopkins, Robert S., Jr.: *See*—
Gurley, Thomas M.; Hopkins, Robert S., Jr.; and Fischer, Wolf-Dieter, 4,227,215, Cl. 358-160.000.
Hopmans, Jan H. M.: *See*—
Elders, Marius J. A.; and Hopmans, Jan H. M., 4,227,143, Cl. 323-48.000.
Hopson, James E.; and Slater, Arthur B., to Raytheon Company. Optical tracking system utilizing spaced-apart detector elements. 4,227,077, Cl. 250-203.00R.
Horian, James G. Control system for vehicle air conditioner. 4,226,090, Cl. 62-133.000.
Horikawa, Kouetsu; Mori, Kiyosuke; and Io, Yukito, to Nippon Steel Corporation. Automatic article-laying apparatus. 4,226,563, Cl. 414-10.000.
Horlein, Gerhard: *See*—
Koch, Manfred; Handte, Reinhard; Horlein, Gerhard; Leditschke, Heinrich; Kocher, Helmut; and Langeluddeke, Peter, 4,227,009, Cl. 560-61.000.
Hornbaker, Edwin D.: *See*—
Jones, Jesse D.; and Hornbaker, Edwin D., 4,226,757, Cl. 260-37.00R.
Horne, Edward A. Dome structure. 4,227,047, Cl. 179-1.00E.
Horskorte, Helmut: *See*—
Bucken, Hans J.; and Horskorte, Helmut, 4,226,945, Cl. 521-92.000.
Horton Manufacturing Company, Inc.: *See*—
Loken, Philip I., 4,226,095, Cl. 64-27.0CT.

Hoskinson, William R.: *See*—
Klaiber, George S.; Ippolito, Anthony C.; and Hoskinson, William R., 4,226,157, Cl. 84-1.220.
Houck, John C.: *See*—
Klein, Gerold K. V.; and Houck, John C., 4,226,854, Cl. 424-94.000.
Houkes, Henk, to U.S. Philips Corporation. Circuit arrangement comprising a high-voltage power transistor. 4,227,099, Cl. 307-315.000.
Howard, Norman B., to Procter & Gamble Company, The. Meat analog compositions. 4,226,890, Cl. 426-92.000.
Howells, George A.; and Woodman, Douglas E., to International Standard Electric Corporation. Modified Miller Code encoder. 4,227,184, Cl. 340-347.0DD.
Howerton, Larry L. Combination cape and utility bag. 4,225,978, Cl. 2-88.000.
Hughes Aircraft Company: *See*—
Amboss, Kurt, 4,227,090, Cl. 250-492.00A.
Glassow, Franklyn A.; and Cunningham, Arthur C., 4,226,484, Cl. 308-201.000.
Grinberg, Jan; Waldner, Michael; and Jenney, Joe A., 4,227,201, Cl. 357-24.000.
Herman, Elvin E.; and Williams, Frederick C., 4,227,194, Cl. 343-5.0CM.
Huhtala, Olavi A.: *See*—
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Humber, Leslie G.: *See*—
Demerson, Christopher A.; and Humber, Leslie G., 4,226,860, Cl. 424-240.000.
Humes, Calvin, Jr.; Miller, Sammy L.; and Kindig, Alan L., to General Electric Company. Apparatus for insulating an internal motor connection. 4,227,103, Cl. 310-71.000.
Hunt, Delbert E., to TRW Inc. Manufacturing method for metalized plastic dielectric capacitors for improved current capabilities. 4,226,011, Cl. 29-25.420.
Hunter Douglas International N.V.: *See*—
Hennequin, Petrus J., 4,226,455, Cl. 292-345.000.
Hunter, Edwin J., to Toro Company, The. Multiple vortex dripper. 4,226,368, Cl. 239-542.000.
Hunter, Walter D., to Texaco Development Corp. Secondary recovery method utilizing thickened water. 4,226,730, Cl. 252-8.55D.
Hunter, Walter D., to Texaco Development Corp. Secondary recovery process utilizing sulfonated polyphenols. 4,226,731, Cl. 252-8.55D.
Hurko, Bohdan: *See*—
Payne, Thomas R.; and Hurko, Bohdan, 4,227,062, Cl. 219-10.55B.
Hurst, George T.: *See*—
Absolon, Victor J.; Hurst, George T.; Worboys, John C.; Barnett, George H.; and Dickson, Ross P., 4,226,672, Cl. 162-3.000.
Hustler, David, to Rolls-Royce Limited. Method of forming a porous sheet. 4,226,686, Cl. 204-129.550.
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Tarpley, William B., Jr.; Huzinec, John R.; and Freeman, Marion K., 4,226,727, Cl. 252-8.000.
Hyakutake, Seiichi, to Nippon Gakki Seizo Kabushiki Kaisha. Percussion instrument with electric pickup unit. 4,226,156, Cl. 84-1.140.
Hyatt, Robert L.; Niessner, Norbert H.; and Sumser, Richard D., to Ametek, Inc. Wet pick-up vacuum unit. 4,226,575, Cl. 417-423.00A.
Hydrotile Canada Limited: *See*—
Christian, Alfred W., 4,226,568, Cl. 414-589.000.
Ichikawa, Akira: *See*—
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Ichikawa, Singo, to Citizen Watch Co., Ltd. Electronic timepiece. 4,226,081, Cl. 368-66.000.
ICI Americas Inc.: *See*—
Wildonger, Richard A., 4,227,004, Cl. 548-255.000.
ICI Australia Limited: *See*—
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Iijima, Eiji; and Nishimura, Yoshimi, to Kao Soap Co., Ltd. Pressure-sensitive adhesive tape or sheet. 4,226,915, Cl. 428-492.000.
Iizuka, Kinji; Akahane, Kenji; Momose, Denichi; Kamijo, Yukio; and Ajisawa, Yukiyoshi, to Kissei Pharmaceutical Co., Ltd.; and Ono Pharmaceutical Co., Ltd. Imidazole derivative. 4,226,878, Cl. 424-273.00R.
Ikebata, Toyokazu: *See*—
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Ikeda, Hironosuke; and Narukawa, Satoshi, to Sanyo Electric Co., Ltd. Battery with internal electrical connector. 4,226,925, Cl. 429-161.000.
Ikekawa, Nobuo: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, 4,226,788, Cl. 260-397.200.
Ikura, Hiroshi: *See*—
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Illinois Tool Works Inc.: *See*—
Barnoski, Raymond, 4,227,163, Cl. 335-205.000.
McVey, John K.; and Sharp, Larry L., 4,227,169, Cl. 337-182.000.
Porter, Troy L.; and Belansky, Rudolph J., 4,226,136, Cl. 74-416.000.
Imamura, Tomoatsu, to Ricoh Company, Ltd. Stabilized servo motor positioning apparatus. 4,227,133, Cl. 318-616.000.
Imataki, Mitsumasa, to Mitsubishi Denki Kabushiki Kaisha. Lightning arrester device. 4,227,229, Cl. 361-117.000.
Imperial Chemical Industries Limited: *See*—
Hayden, Percy; Clayton, Richard W.; and Cope, Alan F. G., 4,226,782, Cl. 260-348.340.
Kay, Ian T., 4,226,990, Cl. 544-212.000.
Marsden, John H.; and Harrison, Norman, 4,226,994, Cl. 544-251.000.
Imperial Group Limited: *See*—
Stout, Stephen E., 4,226,703, Cl. 209-127.00B.
Ina, Toshikazu: *See*—
Kohama, Tokio; Matsui, Takeshi; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, 4,226,222, Cl. 123-568.000.
Industrie Pirelli, S.p.A.: *See*—
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Innes, Robert A.: *See*—
Cooke, William E.; and Innes, Robert A., 4,226,680, Cl. 204-28.000.
Innocento Santeustacchio S.p.A.: *See*—
Ramusino, Francesco C., 4,226,561, Cl. 409-232.000.
Inoue, Hiroshi: *See*—
Komeya, Katsutoshi; Inoue, Hiroshi; Kudo, Haruo; and Endo, Hiroshi, 4,226,841, Cl. 423-345.000.
Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,226,053, Cl. 51-165.770.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Grinding apparatus. 4,226,053, Cl. 51-165.770.
Inoue, Satoshi; and Komorita, Fujio, to Kabushiki Kaisha Ohara Kogaku Garasu Seizosho. Optical glass. 4,226,627, Cl. 106-47.00Q.
Inouye, Shigeharu: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Suzuki, Akira; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,226,610, Cl. 71-86.000.
Insolio, Thomas A., to Fletcher-Terry Company, The. Compensating glass scoring head. 4,226,153, Cl. 83-881.000.
Institute of Gas Technology: *See*—
Sammells, Anthony F., 4,226,922, Cl. 429-104.000.
Institute po Metaloznanie i Technologia na Metalite: *See*—
Nikolov, Ivan D.; Minchev, Pavel M.; Dimitrov, Marin A.; Georgiev, Assen P.; and Chorbov, Iliya G., 4,227,033, Cl. 13-27.000.
Instrumentation Laboratory Inc.: *See*—
Tiffany, Thomas O.; Manning, Gilbert B.; Thayer, Philip C.; and Coelho, Chris M., 4,226,531, Cl. 356-246.000.
Interlock Industries Limited: *See*—
Davis, Ronald P., 4,226,002, Cl. 16-179.000.
International Business Machines Corporation: *See*—
Blaskovic, Silvio U.; and Cornell, Robert W., 4,226,353, Cl. 226-74.000.
Chu, Richard C., 4,226,281, Cl. 165-80.00A.
Coburn, John W.; and Kay, Eric, 4,226,896, Cl. 427-34.000.
Ehrsam, William F.; Elander, Robert C.; Hollis, Lloyd L.; Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Oseas, Jonathan; and Tuchman, Walter L., 4,227,253, Cl. 375-2.000.
Faure, Louis H.; and Hodge, Philo B., 4,227,149, Cl. 324-158.00P.
Gergaud, Claude J.; Grimanelli, Etienne; and Tracol, Andre G., 4,227,178, Cl. 340-147.00R.
Godard, Dominique N.; and Thirion, Philippe E., 4,227,152, Cl. 375-13.000.
Godard, Dominique N., 4,227,252, Cl. 375-113.000.
Holecek, Joseph J.; Plummer, William B.; Schwieters, Clarence R.; and Zell, Michael N., 4,226,570, Cl. 414-751.000.
Newman, Eric L., 4,227,175, Cl. 340-146.200.
Winters, Harold F.; and Chapman, Brian N., 4,226,666, Cl. 156-643.000.
International Flavors & Fragrances Inc.: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,226,729, Cl. 252-8.900.
International Standard Electric Corporation: *See*—
Howells, George A.; and Woodman, Douglas E., 4,227,184, Cl. 340-347.0DD.
International Telephone and Telegraph Corporation: *See*—
Holland, John M., 4,227,075, Cl. 370-4.000.
Internationale Octrooi Maatschappij: *See*—
Ottow, Alexander B., 4,226,358, Cl. 229-44.00R.
Io, Yukito: *See*—
Horikawa, Kouetsu; Mori, Kiyosuke; and Io, Yukito, 4,226,563, Cl. 414-10.000.
Ippolito, Anthony C.: *See*—
Klaiber, George S.; Ippolito, Anthony C.; and Hoskinson, William R., 4,226,157, Cl. 84-1.220.
Irazoqui, Carlos A.; and Scordato, Emil A., to Medical Laboratory Automation, Inc. Blood bank microscopes with oscillating vessel support means. 4,226,503, Cl. 350-87.000.
Isenberg, Arnold O. Solid state combustion sensor. 4,226,692, Cl. 204-195.00S.
Ishida, Hidekuni: *See*—
Takahashi, Kouichi; Ishida, Hidekuni; and Yonezawa, Toshio, 4,226,650, Cl. 148-188.000.
Ishii, Seiji: *See*—
Yukuta, Toshio; Fukuda, Hiroya; Ishii, Seiji; and Utsumi, Kazuo, 4,226,947, Cl. 521-107.000.
Ishijima, Yasumori; and Murooka, Rikichi, to Tektronix, Inc. Waveform observing method and apparatus. 4,227,121, Cl. 315-367.000.
Ishikawa, Tokihiko, to O'Connor Engineering Laboratories, Inc. Rotary combustor wall. 4,226,584, Cl. 432-77.000.

Ishikawa, Toshikatsu; Kawazumi, Kazuhisa; Yamazoe, Hiroshi; and Sugiura, Isao, to Nippon Carbon Co., Ltd. Process for producing flexible graphite. 4,226,821, Cl. 264-134.000.
Ishitani, Hayao: *See*—
Sasaki, Takashi; Hagiwara, Miyuki; Araki, Kunio; Ishitani, Hayao; Saito, Eisuke; and Komatsu, Kyozi, 4,226,687, Cl. 204-159.130.
Ishizawa, Hideo; Niwayama, Akira; Shimizu, Mitsuru; and Kagami, Takashi, to Toppan Printing Co., Ltd. Method of manufacturing a decorative panel. 4,226,933, Cl. 430-320.000.
Isobe, Mitsuhide, to Shimano Industrial Company, Limited. Front derailleur for a bicycle. 4,226,130, Cl. 474-82.000.
Isobe, Mitsuhide: *See*—
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Isobe, Teruhiko, to Pioneer Electronic Corporation. Video signal recording system. 4,227,213, Cl. 358-128.500.
Isoyama, Seizi: *See*—
Watanabe, Yasuo; Isoyama, Seizi; and Yamamichi, Yoshikazu, 4,226,843, Cl. 423-594.000.
Ito, Hideo: *See*—
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Ito, Satoru: *See*—
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Ito, Yukio: *See*—
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Itoh, Toshiaki: *See*—
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Iversen, Sven E.: *See*—
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Iwami, Isamu: *See*—
Yoshino, Akira; Iwami, Isamu; and Wakabayashi, Tsuneo, 4,226,908, Cl. 428-310.000.
Iwasaki, Hiroshi; Murakami, Takeshi; and Kondo, Mitsuru, to Kanzaki Paper Manufacturing Co., Ltd. Heat-sensitive recording material. 4,226,912, Cl. 428-411.000.
Izumi Denki Corporation: *See*—
Fujita, Teizo; Ikebata, Toyokazu; and Fujisato, Harumi, 4,227,162, Cl. 335-202.000.
Izumi Products Company: *See*—
Suganuma, Yasuo, 4,226,110, Cl. 72-416.000.
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Jablonski, Dane E.: *See*—
Cowfer, Joseph A.; Jablonski, Dane E.; Kovach, Ronald M.; and Magistro, Angelo J., 4,226,798, Cl. 260-465.300.
Jacob, Ezekiel J., to Haworth, John Brian. Microporous coated fabrics from clustered microspheres. 4,226,906, Cl. 428-283.000.
Jacobs, Jacobus H., to U.S. Philips Corporation. Display device comprising a liquid display medium. 4,226,509, Cl. 350-343.000.
Jacobsen, Hans: *See*—
Westerberg, Gerhard; and Jacobsen, Hans, 4,226,024, Cl. 33-143.00L.
Jacobson, Kenneth E., to Beckman Instruments, Inc. Direct drive high speed ultracentrifuge. 4,226,359, Cl. 233-24.000.
Jacobson, Sava. Telephone answering device having balanced input. 4,227,053, Cl. 179-6.00R.
Jagemann, Alfred. Stair construction and method for making same. 4,226,065, Cl. 52-189.000.
Jamiolkowski, Dennis D.: *See*—
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,226,243, Cl. 128-335.500.
Jamison, John C.: *See*—
Norris, James R.; Miller, Guy W.; Jamison, John C.; and Ransom, Ralph D., 4,226,365, Cl. 239-66.000.
Jansson, Gunnar; and Linderoth, Gustaf, to ASEA Aktiebolag. Method of applying a strippable outer semiconductive layer on an insulated cable conductor. 4,226,823, Cl. 264-174.000.
Jansz, Joost W., to Hollandsche Beton Groep N.V. Apparatus for pile driver cushion recoil. 4,226,287, Cl. 173-126.000.
Janz, Joachim; and Mentzel, Bodo, to Gebr. Happich GmbH. Arm rest shaped to include a through grip or hand grip with hollow molded body. 4,226,464, Cl. 296-153.000.
Japan Atomic Energy Research Institute: *See*—
Sasaki, Takashi; Hagiwara, Miyuki; Araki, Kunio; Ishitani, Hayao; Saito, Eisuke; and Komatsu, Kyozi, 4,226,687, Cl. 204-159.130.
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Japan Silicon Co., Ltd.: *See*—
Shudo, Taro; Kudo, Bosshi; and Tamai, Yasushi, 4,226,834, Cl. 422-249.000.
Jarret, Jacques H.; and Jarret, Jean M. B. Pulsed excitation alternator. 4,227,142, Cl. 322-3.000.
Jarret, Jean M. B.: *See*—
Jarret, Jacques H.; and Jarret, Jean M. B., 4,227,142, Cl. 322-3.000.
Jarrett, Richard: *See*—
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Jarvik, Robert K., to United States Surgical Corporation. Repeating hemostatic clip applying instruments and multi-clip cartridges therefor. 4,226,242, Cl. 128-325.000.
Jean Walterscheid GmbH: *See*—
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Packman, Elias W.; and Jeffkin, Ruth, 4,226,850, Cl. 424-47.000.
Jelinek, Jerry G.; and Bain, Orville J., to Parker-Hannifin Corporation. Sealing device for screw threads. 4,226,431, Cl. 277-165.000.
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Worsham, Robert; and Jenkins, Kurt L., 4,226,740, Cl. 252-408.000.
Jenkins, Thomas E.; Hahn, Thomas M.; and Cushing, Donald S., to General Electric Company. Stabilizing arrangement for movably mounted drawer or rack. 4,226,490, Cl. 312-331.000.
Jenney, Joe A.: *See*—
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Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,227,019, Cl. 562-503.000.
Jibelian, Gomidas. Method and apparatus for analyzing gases. 4,226,112, Cl. 73-23.100.
Johnson, Carl B., to Pontiac Furniture Industries, Inc. Wall-clearing recliner. 4,226,468, Cl. 297-84.000.
Johnson, Carl B., to Pontiac Furniture Industries, Inc. Reclining chair. 4,226,473, Cl. 297-316.000.
Johnson, Earl R.; and Watkins, Lesley G., to Loffland Brothers Company. Rotary drive disc brake for drawworks. 4,226,311, Cl. 192-8.00R.
Johnson & Johnson: *See*—
Levesque, Yvon G., 4,226,237, Cl. 128-285.000.
Johnson, Leonard A., to United Technologies Corporation. Unitary plug mixer and support therefor. 4,226,085, Cl. 60-262.000.
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Binstock, Morton H.; Lehmer, Robert C.; Johnson, Steven J.; Topolosky, John J.; and Smith, Thomas E., 4,226,086, Cl. 60-656.000.
Johnston, Robert J.; Layciak, Stephen G.; and Colista, Dominic, to Westinghouse Electric Corp. Key lock rotary selector switch. 4,227,056, Cl. 200-44.000.
Johnston, Robert J.; Layciak, Stephen G.; and Colista, Dominic, to Westinghouse Electric Corp. Turn-start push-stop switch operator. 4,227,058, Cl. 200-153.00J.
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Jones, Jesse D.; and Hornbaker, Edwin D., to Ethyl Corporation. Polypivalolactone polymer blends. 4,226,757, Cl. 260-37.00R.
Jones, Loyd W., to Amoco Production Company. Removing oil from waste water with sulfur. 4,226,722, Cl. 210-287.000.
Jones, William R.; and Gunther, Rush B., to Abar Corporation. Power feed through for vacuum electric furnaces. 4,227,032, Cl. 13-20.000.
Jongsma, Cornelis, to Stamicarbon, B.V. Process for the preparation of an alkali-metal benzoate besides a benzyl alcohol. 4,227,017, Cl. 562-494.000.
Joseph, James R., to Brockway Glass Company, Inc. Method and apparatus for eliminating D.C. in an electric glass melting furnace. 4,227,029, Cl. 13-6.000.
Joshi, Devendra C.; and Sharma, Virendra N. Valved volume dividing means. 4,225,985, Cl. 4-324.000.
Joworski, Robert W.: *See*—
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Juso, Hiromi, to Sharp Kabushiki Kaisha. Nonrecorded section detection in an automatic record. 4,226,425, Cl. 274-15.00R.
Kabushiki Kaisha Ohara Kogaku Garasu Seizosho: *See*—
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Kabushiki Kaisha Sato: *See*—
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Kabushiki Kaisha Suwa Seikosha: *See*—
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Kubota, Hirosuke, 4,226,631, Cl. 106-95.000.
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Kagata, Tooru, to Aisin Seiki Kabushiki Kaisha. Free wheel hub mechanism. 4,226,315, Cl. 192-38.000.
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KAI Cutlery Center Co., Ltd.: *See*—
Sugiyama, Makoto, 4,226,019, Cl. 30-41.000.
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Kaiser, Emil T. Synthesis of steroids. 4,226,770, Cl. 260-239.55C.
Kajfez, Franjo; Sunjic, Vitomir; and Caplar, Vesna, to CRC Compagnia di Recerca Chimica S.A. Novel method for preparing N(1)-alkylated-5-phenyl-7-substituted-2-deoxy-1,4-benzodiazepines. 4,226,766, Cl. 260-239.0BD.
Kakei, Mitsuo: *See*—
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Kalopissis, Gregoire; and Bugaut, Andree, to L'Oreal. 2- and 5-Aminoalkylamino anthraquinone dyes useful as basic dyes in coloring hair. 4,226,784, Cl. 260-378.000.
Kamei, Takeji, to Nihon Automatic Machinery Mfg. Co., Ltd.. Method and apparatus for treating water containing wastes. 4,226,712, Cl. 210-710.000.
Kamijo, Yukio: *See*—
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Kansai Paint Co., Ltd.: *See*—
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Kanten, Thomas M., to Minnesota Mining and Manufacturing Company. Cobalt-doped acicular hyper-magnetite particles. 4,226,909, Cl. 428-329.000.
Kanzaki Paper Manufacturing Co., Ltd.: *See*—
Iwasaki, Hiroshi; Murakami, Takeshi; and Kondo, Mitsuru, 4,226,912, Cl. 428-411.000.
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Kapolyi, Laszlo; Szentgyorgyi, Geza; Vamos, Gyorgy; Grzymek, Jerzy; Grzymek, Anna D.; Bethke, Stanislaw; and Werynski, Bronislaw, to Tatabanyai Szenbanyak. Process for producing high-purity alumina and hydraulic cement. 4,226,632, Cl. 106-100.000.
Kappa Fertilizzanti S.p.A.: *See*—
Mainardi, Anacleto C., 4,226,833, Cl. 422-189.000.
Karl Lutz, Firma: *See*—
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Karlsson, Jarding U., to ABU Aktiebolag. Fishing reels with a level-wind mechanism. 4,226,384, Cl. 242-84.420.
Karlsson, Jarding U., to ABU Aktiebolag. Multiplying fishing reel with level-wind carriage. 4,226,387, Cl. 242-212.000.
Kashiwa, Norio: *See*—
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Katata, Tetsuo, to Dai-Ichi Seiko Co., Ltd. Tape reel. 4,226,381, Cl. 242-71.800.
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Katoh, Kazuhisa: *See*—
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Katz, Lawrence E.; Gay, Walter A.; and Schroeder, Hansjuergen A., to Olin Corporation. Selected 3-trichloromethyl-5-cyclic amine-1,2,4-thiadiazole compounds and their use as ammonium nitrification inhibitors. 4,226,609, Cl. 71-64.00F.
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Kawamura, Yoshikazu, to Kabushiki Kaisha Suwa Seikosha. Step motor driving circuit. 4,227,135, Cl. 318-696.000.
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Kawasaki, Masahiro; and Takaoka, Yukio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera aperture controlling brake. 4,226,521, Cl. 354-271.000.
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Kay, Ian T., to Imperial Chemical Industries Limited. Triazine-diones. 4,226,990, Cl. 544-212.000.
Kayahara, Kenji, to Kyokado Engineering Co., Ltd. Injection process and injection apparatus for solidifying a ground. 4,226,556, Cl. 405-263.000.
Kayahara, Kenji, to Kyokado Engineering Co., Ltd. Injection process and injection apparatus for solidifying a ground. 4,226,557, Cl. 405-269.000.
Kazama, Kazuo; Oka, Akira; Shigihara, Masayoshi; and Shinbashi, Sueo, to Fujitsu Limited. Electronic device having a printed circuit board unit therein. 4,226,491, Cl. 339-17.0LM.
Kazama, Shigeru; and Kage, Kouzou, to Nippon Telegraph and Telephone Public Corporation; and Nippon Electric Co., Ltd. Clock pulse regenerator. 4,227,251, Cl. 375-110.000.
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Kedem, Ora; and Robinson, Tamar, to Yeda Research and Development Co. Ltd. Electrodialysis device. 4,226,688, Cl. 204-180.00P.
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Keller, Teddy M.; and Griffith, James R., to United States of America, Navy. Terminated bis(3,4-dicyanophenoxy) alkanes. 4,226,801, Cl. 260-465.00F.
Kelley, Jerry K.; and Mateja, Eugene V. Water alarm for monitoring floor moisture. 4,227,190, Cl. 340-604.000.
Kellner, Ferdinand. Photographic camera having long focal length objective. 4,226,518, Cl. 354-79.000.
Kelly, Calvin E.; and Nicely, Thomas E., to United States Steel Corporation. Latch mechanism for coke oven doors. 4,226,679, Cl. 202-248.000.
Kennecott Copper Corporation: *See*—
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Kenworthy, Grant F., to Weber Marking Systems, Inc. Applicator for liquid adhesive to a paper form for securing a stencil thereto. 4,226,209, Cl. 118-708.000.
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Kerr, Ada M.: *See*—
Kerr, Kenneth G., 4,226,450, Cl. 292-59.000.
Kerr, Alan G.: *See*—
Kerr, Kenneth G., 4,226,450, Cl. 292-59.000.
Kerr, Bruce K.: *See*—
Kerr, Kenneth G., 4,226,450, Cl. 292-59.000.
Kerr, Colin F.: *See*—
Kerr, Kenneth G., 4,226,450, Cl. 292-59.000.
Kerr, Keith E.: *See*—
Kerr, Kenneth G., 4,226,450, Cl. 292-59.000.
Kerr, Kenneth G., to Kerr, Ada M.; Kerr, Alan G.; Kerr, Keith E.; Kerr, Bruce K.; and Kerr, Colin F. Gate latch. 4,226,450, Cl. 292-59.000.
Kersten, Jean, to Baxter Travenol Laboratories, Inc. Pressure isolator. 4,226,124, Cl. 73-706.000.
Kessler, Gerald. Anti-leakage window frame construction for tilt-in window sash. 4,226,050, Cl. 49-181.000.
Keultjes, Henry B. Chair support. 4,226,391, Cl. 248-176.000.
Keystone International, Inc.: *See*—
Aldrich, Joe L., 4,226,118, Cl. 73-290.00V.
Kholin, Vladimir G.: *See*—
Berber, Viktor A.; Pervushin, Evgeny S.; Murtazin, Khafiz M.; and Kholin, Vladimir G., 4,226,532, Cl. 356-336.000.
Khosropour, Mostafa M., to Nelson Industries, Inc. Protective cap for an exhaust pipe. 4,226,173, Cl. 98-59.000.

Kidd, Robert P.: *See*—
Booth, Jack J.; Branch, William C.; and Kidd, Robert P., 4,226,344, Cl. 222-504.000.
Kikumoto, Ryoji: *See*—
Okamoto, Shosuke; Kikumoto, Ryoji; Tamao, Yoshikuni; Tonomura, Shinji; and Ohkubo, Kazuo, 4,227,006, Cl. 560-10.000.
Kimura, Muneaki; Arakawa, Tatsumi; Ozaki, Masaru; and Kobayashi, Hidehiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Thin metal-halogen cells. 4,226,924, Cl. 429-126.000.
Kimura, Takeo: *See*—
Shibasaki, Ichiro; Ohmura, Kaoru; Kimura, Takeo; and Kobayashi, Hidehiko, 4,227,039, Cl. 174-68.500.
Kind, Cornelis E.: *See*—
Bakker, Pieter M.; Kind, Cornelis E.; and Aurich, Volker G., 4,226,797, Cl. 260-460.000.
Kinderman, Gerard H.; Rutledge, Robert L.; and Steelman, Ronald S., to Minnesota Mining and Manufacturing Company. Photographic speed transfer element with oxidized polyethylene stripping layer. 4,226,927, Cl. 430-14.000.
Kindig, Alan L.: *See*—
Humes, Calvin, Jr.; Miller, Sammy L.; and Kindig, Alan L., 4,227,103, Cl. 310-71.000.
Kindrick, Robert H.; and Harrison, Benjamin C., to Sherwin-Williams Company, The. Extended $BaCO_3$ for brick scum prevention. 4,226,635, Cl. 106-306.000.
King Minnow, Inc.: *See*—
Schweim, Donald E., 4,226,338, Cl. 222-162.000.
King Radio Corporation: *See*—
Bazil, Ralph E., 4,227,095, Cl. 307-229.000.
Kintner, Paul M., to Eaton Corporation. Integrated circuit controller programmable with unidirectional-logic instructions representative of sequential wire nodes and circuit elements of a ladder diagram. 4,227,247, Cl. 364-900.000.
Kirkpatrick, Joel L.; and Doyle, William C., Jr., to Gulf Oil Corporation. 5-Substituted-3-fluorosulfonyl-4H-1,2,4-triazoles and use as insecticides and miticides. 4,226,873, Cl. 424-269.000.
Kirner, Hans D.: *See*—
Peter, Richard; Kirner, Hans D.; and Gehrlein, Rolf, 4,226,596, Cl. 8-532.000.
Kirsch, Bernhard. Safety ski-bindings. 4,226,439, Cl. 280-628.000.
Kishi, Jun: *See*—
Fukaya, Hirokazu; and Kishi, Jun, 4,227,127, Cl. 318-317.000.
Kissei Pharmaceutical Co., Ltd.: *See*—
Iizuka, Kinji; Akahane, Kenji; Momose, Denichi; Kamijo, Yukio; and Ajisawa, Yukiyoshi, 4,226,878, Cl. 424-273.00R.
Kitahara, Haruo, to Shinano Tokki Corporation. Electromagnetic rotating apparatus. 4,227,164, Cl. 335-230.000.
Kitamoto, Tatsuji: *See*—
Shirahata, Ryuji; and Kitamoto, Tatsuji, 4,226,681, Cl. 204-38.0ST.
Kitao, Chiaki: *See*—
Omura, Satoshi; Kitao, Chiaki; Nakagawa, Akira; Tanaka, Haruo; Awaya, Juichi; and Oiwa, Ruiko, 4,226,879, Cl. 424-278.000.
Kitasato Institute, The: *See*—
Omura, Satoshi; Kitao, Chiaki; Nakagawa, Akira; Tanaka, Haruo; Awaya, Juichi; and Oiwa, Ruiko, 4,226,879, Cl. 424-278.000.
Kiwala, Jacob: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,226,729, Cl. 252-8.900.
Kiyoura, Tadamitsu: *See*—
Kawamata, Motoo; Kiyoura, Tadamitsu; Ohshima, Kazushi; Kogure, Yasuo; Kudoh, Akihide; and Kotani, Makoto, 4,227,023, Cl. 568-804.000.
Klaiber, George S.; Ippolito, Anthony C.; and Hoskinson, William R., to Wurlitzer Company, The. Waveform synthesis for an electronic musical instrument. 4,226,157, Cl. 84-1.220.
Klein, Gerold K. V.; and Houck, John C., to Klein, Gerold K. V. Debridement of devitalized tissue with hydrolytic enzyme product. 4,226,854, Cl. 424-94.000.
Klein, Howard P.: *See*—
Waddill, Harold G.; and Klein, Howard P., 4,226,971, Cl. 528-162.000.
Klein, Paul E. Orthodontic headgear release assembly. 4,226,589, Cl. 433-5.000.
Klein, Schanzlin & Becker Aktiengesellschaft: *See*—
Stohr, Heinz; Kuntz, Gerhard; and Scheer, Gerhard, 4,227,043, Cl. 174-151.000.
Kleinewefers GmbH: *See*—
Schiffer, Gunter, 4,226,598, Cl. 8-125.000.
KLI, Inc.: *See*—
Polk, Todd J.; and McGowan, Francis E., 4,226,239, Cl. 128-303.00A.
Klingler, Karl H.; and Traube, Horst, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for production of optically active bases. 4,226,803, Cl. 260-501.110.
Klockner-Humboldt-Wedag AG: *See*—
Brachthauser, Kunibert; and Herchenbach, Horst, 4,226,586, Cl. 432-106.000.
Deussner, Herbert, 4,226,585, Cl. 432-106.000.
Kluger, Edward W.; and Su, Tien K., to Milliken Research Corporation. Polycycloaliphatic polyamines. 4,226,737, Cl. 252-182.000.
Kmiec, Chester J.: *See*—
Albright, James A.; and Kmiec, Chester J., 4,226,813, Cl. 260-927.00R.
Knapp, Edward J., Jr., to Gould Inc. Fusible element for electric fuses based on a M-effect. 4,227,168, Cl. 337-161.000.
Knecht, Eduard, to Ciba-Geigy Corporation. Trimellitic acid ester and its use in a protective lacquer based on epoxide resin. 4,226,755, Cl. 260-31.4EP.
Knickerbocker Toy Co., Inc.: *See*—
Lehmann, Roger W.; and Siravo, Vincent F., 4,226,045, Cl. 46-25.000.
Knight, David. Sanding disc container. 4,226,329, Cl. 206-372.000.
Knittel, Helmut: *See*—
Dimroth, Peter; Knittel, Helmut; Seitz, August; and Wolff, Dietrich, 4,226,634, Cl. 106-288.00Q.
Knobel, Kenneth M.: *See*—
Balzer, Winton E.; and Knobel, Kenneth M., 4,226,072, Cl. 53-298.000.
Knoos, Stellan, to AGA Aktiebolag. Solar energy collector. 4,226,226, Cl. 126-432.000.
Knorr-Bremse GmbH: *See*—
Pollinger, Hans; and Lohmeier, Paul, 4,226,481, Cl. 303-82.000.
Stable, Georg; and Hintner, Josef, 4,226,482, Cl. 303-82.000.
Staltmeir, Josef; Wosegien, Bernd; and Nadas, Julius, 4,226,168, Cl. 92-130.00A.
Knospler, William M. Ultrasonic imaging system and improved signal processor therefor. 4,226,121, Cl. 73-602.000.
Kobashi, Kiyoshi: *See*—
Kohama, Tokio; Matsui, Takeshi; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, 4,226,222, Cl. 123-568.000.
Kobayashi, Akio; Endo, Kunio; and Omori, Norio, to Nippondenso Co., Ltd. Electronically-controlled fuel injection system for internal combustion engine having odd numbers of cylinders. 4,226,215, Cl. 123-487.000.
Kobayashi, Eiji; and Takahashi, Hiroyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Damper assembly for keyboard musical instruments. 4,226,158, Cl. 84-239.000.
Kobayashi, Hidehiko: *See*—
Kimura, Muneaki; Arakawa, Tatsumi; Ozaki, Masaru; and Kobayashi, Hidehiko, 4,226,924, Cl. 429-126.000.
Shibasaki, Ichiro; Ohmura, Kaoru; Kimura, Takeo; and Kobayashi, Hidehiko, 4,227,039, Cl. 174-68.500.
Kobayashi, Minoru: *See*—
Sato, Masaaki; and Kobayashi, Minoru, 4,227,222, Cl. 360-60.000.
Kobayashi, Osamu: *See*—
Sato, Hideo; and Kobayashi, Osamu, 4,226,429, Cl. 277-96.200.
Kobayashi, Yoshiro: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, 4,226,788, Cl. 260-397.200.
Kobe Steel, Limited: *See*—
Nakanishi, Sadayuki, 4,226,258, Cl. 137-208.000.
Koch, Manfred; Handte, Reinhard; Horlein, Gerhard; Leditschke, Heinrich; Kocher, Helmut; and Langeluddeke, Peter, to Hoechst Aktiengesellschaft. Phenoxyphenoxy-propionic · acid derivatives. 4,227,009, Cl. 560-61.000.
Kocher, Helmut: *See*—
Koch, Manfred; Handte, Reinhard; Horlein, Gerhard; Leditschke, Heinrich; Kocher, Helmut; and Langeluddeke, Peter, 4,227,009, Cl. 560-61.000.
Kocherscheidt, Hans: *See*—
Haslbeck, Peter; and Kocherscheidt, Hans, 4,226,217, Cl. 123-41.620.
Koenig, Karl-Heinz: *See*—
Oeser, Heinz-Guenter; Koenig, Karl-Heinz; and Mangold, Dietrich, 4,226,811, Cl. 568-937.000.
Kogure, Yasuo: *See*—
Kawamata, Motoo; Kiyoura, Tadamitsu; Ohshima, Kazushi; Kogure, Yasuo; Kudoh, Akihide; and Kotani, Makoto, 4,227,023, Cl. 568-804.000.
Kohama, Tokio; Matsui, Takeshi; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation system for internal combustion engines. 4,226,222, Cl. 123-568.000.
Koizumi, Yoshinori: *See*—
Shiraishi, Makoto; Uchida, Hiroshi; Koizumi, Yoshinori; and Saito, Akira, 4,226,966, Cl. 526-202.000.
Kokubo, Eiichi; and Sugai, Akemi, to Laurel Bank Machine Co., Ltd. Coin counting and discharge machine having reciprocating pushers for transferring coins. 4,226,253, Cl. 133-4.00A.
Kokusai Denshin Denwa Co., Ltd.: *See*—
Tamori, Michitoshi; Furuya, Katsuhiko; Yanagidaira, Hidetaka; and Sakaki, Hiroshi, 4,227,160, Cl. 333-18.000.
Komanduri, Rangachary; and Reed, William R., Jr., to General Electric Company. Dressing and conditioning resin-bonded diamond grinding wheel. 4,226,055, Cl. 51-325.000.
Komatsu, Kyozi: *See*—
Sasaki, Takashi; Hagiwara, Miyuki; Araki, Kunio; Ishitani, Hayao; Saito, Eisuke; and Komatsu, Kyozi, 4,226,687, Cl. 204-159.130.
Komatsu, Toshiaki: *See*—
Yamada, Hirotada; Nakagome, Takenari; and Komatsu, Toshiaki, 4,226,863, Cl. 424-246.000.
Komeya, Katsutoshi; Inoue, Hiroshi; Kudo, Haruo; and Endo, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of producing silicon carbide powder. 4,226,841, Cl. 423-345.000.
Kominek, Leo A.: *See*—
Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., 4,226,936, Cl. 435-55.000.
Komorita, Fujio: *See*—
Inoue, Satoshi; and Komorita, Fujio, 4,226,627, Cl. 106-47.00Q.

Kondo, Mitsuru: *See*—
Iwasaki, Hiroshi; Murakami, Takeshi; and Kondo, Mitsuru, 4,226,912, Cl. 428-411.000.

Konkoly, Tibor: *See*—
Paradi, Laszlo; Acs, Miklos; Szucs, Tibor; and Konkoly, Tibor, 4,227,065, Cl. 219-121.0EM.

Konnai, Makoto: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Suzuki, Akira; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,226,610, Cl. 71-86.000.

Konstantinov, Mihail: *See*—
Genev, Ivan V.; Konstantinov, Mihail; Valchev, Alexander; and Peev, Vassil, 4,226,207, Cl. 118-620.000.

Koors, Carl W.: *See*—
Littley, John J.; Koors, Carl W.; Fussner, Richard F.; and Lengel, Frank, 4,226,151, Cl. 83-479.000.

Kopp, Clinton V.: *See*—
Fitzgerald, James A.; Kopp, Clinton V.; and Washington, Freddie L., 4,226,378, Cl. 242-18.00G.

Koppehele, Hugh P.: *See*—
Gardner, James J.; and Koppehele, Hugh P., 4,227,069, Cl. 219-421.000.

Koppel, Gary A.: *See*—
Cooper, Robin D. G.; Koppel, Gary A.; and McShane, Lawrence J., 4,226,767, Cl. 260-239.00A.

Koral, Marvin: *See*—
Goodman, Donald; Koral, Marvin; Miller, Robert S.; and Stanaback, Robert J., 4,226,974, Cl. 528-483.000.
Goodman, Donald; Koral, Marvin; Miller, Robert S.; and Stanaback, Robert J., 4,226,975, Cl. 528-483.000.
Goodman, Donald; Koral, Marvin; Miller, Robert S.; and Stanaback, Robert J., 4,226,976, Cl. 528-498.000.

Korolkov, Anatoly G.: *See*—
Rozenfeld, Lev M.; Popov, Jury S.; and Korolkov, Anatoly G., 4,227,102, Cl. 310-52.000.

Koshiyama, Isamu; and Naitou, Yoshisuke, to Fujimi Kenmazai Kogyo Co., Ltd. Method for polishing a single crystal or gadolinium gallium garnet. 4,226,623, Cl. 106-3.000.

Kotani, Makoto: *See*—
Kawamata, Motoo; Kiyoura, Tadamitsu; Ohshima, Kazushi; Kogure, Yasuo; Kudoh, Akihide; and Kotani, Makoto, 4,227,023, Cl. 568-804.000.

Kotzsch, Hans-Joachim; Seiler, Claus-Dietrich; and Vahlensieck, Hans-Joachim, to Dynamit Nobel Aktiengesellschaft. Process for the manufacture of monomeric and oligomeric silicic acid esters. 4,226,793, Cl. 556-470.000.

Kovach, Ronald M.: *See*—
Cowfer, Joseph A.; Jablonski, Dane E.; Kovach, Ronald M.; and Magistro, Angelo J., 4,226,798, Cl. 260-465.300.

Kovats, Ervin; Demole, Edouard; Ohloff, Gunther; and Stoll, Max, deceased (by Stoll, Suzanne, executrix), to Firmenich SA. Flavoring with cycloaliphatic unsaturated ketones. 4,226,892, Cl. 426-538.000.

Koyama, Minoru: *See*—
Teshima, Toru; Nozaki, Hiroshi; Koyama, Minoru; and Katoh, Kazuhisa, 4,226,929, Cl. 430-57.000.

Kozacka, Frederick J.; and Wilks, Howard G., to Gould Inc. High-interrupting capacity fuse. 4,227,167, Cl. 337-161.000.

Kraayenhof, Hans. Flooring comprising adjoining plastics elements. 4,226,064, Cl. 52-180.000.

Kraemer, Rolf H., to Fansteel Inc. Toolholder anvil seat for indexable inserts. 4,226,560, Cl. 407-101.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Bertholdt, Horst-Otto, 4,226,640, Cl. 134-3.000.

Kramer, Dieter, to Armaturenfabrik Hermann Voss GmbH & Co. Hose and pipe coupling. 4,226,445, Cl. 285-39.000.

Kramer, Friedhelm, to Schaeffer-Homberg GmbH. Fastener for bands or the like. 4,226,008, Cl. 24-206.00B.

Krauss-Maffei AG: *See*—
Schluter, Klaus, 4,226,543, Cl. 366-159.000.

Kremer, Walter, to Bockemuehl, Johannes. Photographic enlarging easel. 4,226,528, Cl. 355-74.000.

Kritzer, Richard W., to Longevity Products, Inc. Respirators. 4,226,233, Cl. 128-205.130.

Kroenke, William J., to B. F. Goodrich Company, The. Heterocyclic amine molybdate. 4,226,987, Cl. 544-64.000.

Kronlage, John W., to Texas Instruments Incorporated. Single chip integrated analog-to-digital converter circuit powered by a single voltage potential. 4,227,185, Cl. 340-347.0NT.

Kroy Industries Inc.: *See*—
Bradshaw, Franklin C.; Connoy, Thomas P.; and Paque, Michael W., 4,226,547, Cl. 400-613.000.

Krug, Albert E., to Becton, Dickinson and Company. Bracelet assembly for identification device. 4,226,036, Cl. 40-21.00C.

Kubler, Wolfgang. Apparatus for ascertaining the upper level of liquids in tanks or the like. 4,227,057, Cl. 200-84.00C.

Kubler, Wolfgang. Flexible body for use in liquid level indicating apparatus. 4,227,236, Cl. 361-331.000.

Kubota, Hirosuke, to Kabushiki Kaisha Takenaka Komuten; and Kabushiki Kaisha Takenaka Doboku. Method of solidifying noxious wastes. 4,226,631, Cl. 106-95.000.

Kuboyama, Morio: *See*—
Ogasa, Katsuhiro; Kuboyama, Morio; Saito, Minoru; Kudo, Tsutomu; Harada, Yoshitsugu; Kawashiri, Akio; and Takahashi, Eiji, 4,226,847, Cl. 424-12.000.

Kuck, Julius A., to Fairfield University. Micropolarimeter. 4,226,534, Cl. 356-367.000.

Kudo, Bosshi: *See*—
Shudo, Taro; Kudo, Bosshi; and Tamai, Yasushi, 4,226,834, Cl. 422-249.000.

Kudo, Haruo: *See*—
Komeya, Katsutoshi; Inoue, Hiroshi; Kudo, Haruo; and Endo, Hiroshi, 4,226,841, Cl. 423-345.000.

Kudo, Tsutomu: *See*—
Ogasa, Katsuhiro; Kuboyama, Morio; Saito, Minoru; Kudo, Tsutomu; Harada, Yoshitsugu; Kawashiri, Akio; and Takahashi, Eiji, 4,226,847, Cl. 424-12.000.

Kudoh, Akihide: *See*—
Kawamata, Motoo; Kiyoura, Tadamitsu; Ohshima, Kazushi; Kogure, Yasuo; Kudoh, Akihide; and Kotani, Makoto, 4,227,023, Cl. 568-804.000.

Kuehne, Gerhard B.: *See*—
Miram, George V.; and Kuehne, Gerhard B., 4,227,116, Cl. 313-447.000.

Kugelfischer Georg Schafer & Co.: *See*—
Bieber, Theo; Schuster, Friedrich; Paul, Gunther; Schmitt, Gunther; and Schmucker, Wolfgang, 4,226,080, Cl. 57-339.000.

Kumakura, Minoru: *See*—
Yoshida, Masaru; Kumakura, Minoru; and Kaetsu, Isao, 4,226,938, Cl. 435-176.000.

Kumakura, Shokichi. Annular magnet assembly. 4,227,105, Cl. 310-153.000.

Kumzi, Theodore B., to Chemetron Corporation. Slice control circuit for a slicing machine. 4,226,147, Cl. 83-37.000.

Kung, Shin H. Fire extinguisher and fire extinguishing composition. 4,226,728, Cl. 252-8.000.

Kuniya, Keiichi: *See*—
Tsuruoka, Masao; Yagi, Hideyuki; Morita, Keiichi; and Kuniya, Keiichi, 4,226,917, Cl. 428-111.000.

Kunsagi, Laszlo; and Daman, Ernest L., to Foster Wheeler Energy Corporation. Heat exchange apparatus utilizing thermal siphon pipes. 4,226,282, Cl. 165-105.000.

Kunst, Otto: *See*—
Meiller, Hermann; Hocke, Horst; Kunst, Otto; and Hartl, Paul, 4,226,385, Cl. 242-107.40R.

Kuntz, Gerhard: *See*—
Stohr, Heinz; Kuntz, Gerhard; and Scheer, Gerhard, 4,227,043, Cl. 174-151.000.

Kupcak, Kenneth S.; and Piecuch, Rudolph F., to Edward W. Daniel Company. Reinforced plastic yoke. 4,226,550, Cl. 403-157.000.

Kupcikevicius, Vytautas, to Union Carbide Corporation. Large casings stuffing product stoppering means. 4,226,003, Cl. 17-49.000.

Kurapin, Igor N.: *See*—
Frolov, Jury F.; Piljukov, Jury F.; Cherednichenko, Vladimir S.; Orlov, Gennady I.; Kurapin, Igor N.; Shabalina, Roza I.; Lakernik, Mark M.; Gavrilenko, Alexandr F.; Yakovenko, Anatoly A.; Elkina, Alla K.; Golovachev, Anatoly I.; Egorova, Tatyana S.; Vlasov, Jury M.; Smelyansky, Matvei Y., deceased; and Zelichenko, Faina S., administator, 4,226,406, Cl. 266-148.000.

Kurara Co., Ltd.: *See*—
Shiraishi, Makoto; Uchida, Hiroshi; Koizumi, Yoshinori; and Saito, Akira, 4,226,966, Cl. 526-202.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Asano, Kiro; Tamura, Fumio; Kawai, Yoshio; and Yamaki, Kiyoshi, 4,226,633, Cl. 106-269.000.
Yoshikawa, Shinsuke; Hisazumi, Nobuyuki; and Yamamoto, Masataka, 4,226,822, Cl. 264-173.000.

Kurz, Edward A., to Galileo Electro-Optics Corp. Beam detector. 4,227,087, Cl. 250-397.000.

Kusaba, Masanobu: *See*—
Tsukahara, Satoshi; Sato, Isao; Uchiyama, Yoshihiro; and Kusaba, Masanobu, 4,226,088, Cl. 60-752.000.

Kyncl, John J., to Abbott Laboratories. Pyrazolyl amino imidazolines as diuretic agents. 4,226,773, Cl. 424-273.00P.

Kyokado Engineering Co., Ltd.: *See*—
Kayahara, Kenji, 4,226,556, Cl. 405-263.000.
Kayahara, Kenji, 4,226,557, Cl. 405-269.000.

Kyomura, Nobuo: *See*—
Yamamoto, Izuru; Takahashi, Yohji; and Kyomura, Nobuo, 4,226,883, Cl. 424-300.000.

Kyowa Hakko Kogyo Kabushiki Kaisha: *See*—
Omura, Satoshi; Kitao, Chiaki; Nakagawa, Akira; Tanaka, Haruo; Awaya, Juichi; and Oiwa, Ruiko, 4,226,879, Cl. 424-278.000.

Kyushima, Tatsuo: *See*—
Morisawa, Kunio; and Kyushima, Tatsuo, 4,226,200, Cl. 74-606.00R.

L. A. Cellophane: *See*—
Neill, Ronald; and Pigeon, Marcel, 4,226,931, Cl. 430-302.000.

Laauwe, Robert H. Dispensing valve particularly for viscous products. 4,226,342, Cl. 222-494.000.

Labofina S.A.: *See*—
Bracke, William J. I.; and Brandli, Jacqueline, 4,226,955, Cl. 525-316.000.

Lackey, Walter J., Jr.: *See*—
Caputo, Anthony J.; Costanzo, Dante A.; Lackey, Walter J., Jr.; Layton, Frank L.; and Stinton, David P., 4,227,081, Cl. 250-321.000.

Lacombat, Michel: *See*—
Gerard, Rene; and Lacombat, Michel, 4,226,569, Cl. 414-737.000.

Ladin, Eli M., to Federal-Mogul Corporation. Self-aligning clutch bearing assembly. 4,226,321, Cl. 192-110.00B.

Lagowski, Joseph V.: *See—*
Fairchild, Jack R.; Lagowski, Joseph V.; and Gordon, James W., 4,226,476, Cl. 299-31.000.
Lahtinen, Paavo. Electro-mechanical winnings distribution assembly for slot machines. 4,226,252, Cl. 133-1.00R.
Laine, Richard M., to S R I International. Water gas shift reaction and in the hydroformylation and hydrohydroxyformylation reactions. 4,226,845, Cl. 423-655.000.
Lakernik, Mark M.: *See—*
Frolov, Jury F.; Piljukov, Jury F.; Cherednichenko, Vladimir S.; Orlov, Gennady I.; Kurapin, Igor N.; Shabalina, Roza I.; Lakernik, Mark M.; Gavrilenko, Alexandr F.; Yakovenko, Anatoly A.; Elkina, Alla K.; Golovachev, Anatoly I.; Egorova, Tatyana S.; Vlasov, Jury M.; Smelyansky, Matvei Y., deceased; and Zelichenko, Faina S., administator, 4,226,406, Cl. 266-148.000.
Lakes, A. Dale, to Micro-Cel Systems, Inc. Self-metering liquid retentive pad and process for producing same. 4,226,886, Cl. 428-304.000.
Lama, William L.; and Seachman, Ned J., to Xerox Corporation. Anti-strobing filters. 4,226,527, Cl. 355-71.000.
Lambert Brake Corporation: *See—*
Euler, John W.; and Pear, Arthur W., 4,226,319, Cl. 192-85.0CA.
Morgan, George H., 4,226,318, Cl. 192-85.0CA.
Lambie, Alan J.: *See—*
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Shaffer, Myron W., 4,226,664, Cl. 156-499.000.
Lampert, Albert J., to Cambria Spring Company. Auxiliary vehicle spring for lightly loaded conditions. 4,226,441, Cl. 280-718.000.
Landsman, Irving; and Landsman, Mark. Invertible spray dispensing safety cap. 4,226,339, Cl. 222-182.000.
Landsman, Mark: *See—*
Landsman, Irving; and Landsman, Mark, 4,226,339, Cl. 222-182.000.
Lane, Edward S., to United Kingdom Atomic Energy Authority. Preparation of metal complexes. 4,226,983, Cl. 536-113.000.
Lang, Charles W.; and Beneventano, Thomas, to Singer Company, The. Error compensation of synchro control transmitters. 4,227,144, Cl. 323-121.000.
Lang, Walter W.: *See—*
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Langeluddeke, Peter: *See—*
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Langen, Marinus J. M.; and Strauss, Edgar H., to H. J. Langen & Sons Ltd. Method for manufacturing a square bottom bag. 4,226,172, Cl. 93-35.0SB.
Langeraar, Huibert B., to Hollandse Signaalapparaten B.V. Direction finding apparatus. 4,227,196, Cl. 343-100.0CL.
Langham, Arvin L., to Elfab Corporation. Circuit board edge connector. 4,226,496, Cl. 339-176.0MP.
Larsson, Finn H.; and Schwartzbach, Christian, to A/S Niro Atomizer. Gas distribution device for the supply of a processing gas with adjustable flow direction to an atomizing chamber. 4,226,603, Cl. 55-260.000.
Latash, Jury V.: *See—*
Paton, Boris E.; Latash, Jury V.; Grigorenko, Georgy M.; Lisovoi, Jury V.; Stepanenko, Viktor V.; and Asoiants, Grigory B., 4,227,031, Cl. 13-18.00A.
Latter, Albert L.; Hammond, R. Philip; and Dooley, James L., to R & D Associates. Engine system using liquid air and combustible fuel. 4,226,294, Cl. 180-54.00B.
Laurel Bank Machine Co., Ltd.: *See—*
Kokubo, Eiichi; and Sugai, Akemi, 4,226,253, Cl. 133-4.00A.
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Miyagawa, Tuyoshi, 4,227,074, Cl. 235-92.0SB.
Mouri, Shingo; and Ueda, Nobuo, 4,226,254, Cl. 133-8.00E.
Laurent, John A.: *See—*
Brown, Dale M.; Garfinkel, Marvin; and Laurent, John A., 4,227,098, Cl. 307-311.000.
Layciak, Stephen G.: *See—*
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Johnston, Robert J.; Layciak, Stephen G.; and Colista, Dominic, 4,227,058, Cl. 200-153.00J.
Layton, Frank L.: *See—*
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Layton, Paul L., to Gulf & Western Manufacturing Company. Shielded non-metallic container. 4,227,037, Cl. 174-35.0MS.
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Leanza, William J.: *See—*
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Leditschke, Heinrich: *See—*
Koch, Manfred; Handte, Reinhard; Horlein, Gerhard; Leditschke, Heinrich; Kocher, Helmut; and Langeluddeke, Peter, 4,227,009, Cl. 560-61.000.
Lee, Walter F. Cabinet lock with frangible cover plate and push button lock release and alternative key release. 4,226,101, Cl. 70-78.000.
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Hilbert, Richard G., 4,226,077, Cl. 57-18.000.
Lehmann, Roger W.; and Siravo, Vincent F., to Knickerbocker Toy Co., Inc. Stackable toy. 4,226,045, Cl. 46-25.000.
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Leitner, Hans: *See—*
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Lennon, Richard E.: *See—*
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Leonard, Henri, to Micro-Mega S.A. Contra-angle head for driving two dental tools. 4,226,591, Cl. 433-133.000.
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Lerma, Jesse P., to Abbott Laboratories. Amplifier with dark current compensation. 4,227,155, Cl. 330-11.000.
Leupold, Herbert A.: *See—*
Rothwarf, Frederick; Bergner, Robert L.; Leupold, Herbert A.; and Tauber, Arthur, 4,226,620, Cl. 75-134.00C.
Lever Brothers Company: *See—*
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Levesque, Yvon G., to Johnson & Johnson. Layered absorbent structure. 4,226,237, Cl. 128-285.000.
Lew, Yon S. Air-spring return air cylinder. 4,226,167, Cl. 91-399.000.
Lewiner, Jacques: *See—*
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Lewis, Gary W.; and Robinson, Alfred D., to Comsip Delphi, Inc. Method and apparatus for monitoring and measuring a gas. 4,226,675, Cl. 176-19.00R.
Lewis, George D.; Russell, Paul L.; and Stettler, Jeffrey, to United Technologies Corporation. Method and apparatus for reducing nitrous oxide emissions from combustors. 4,226,083, Cl. 60-39.060.
Lewis, Neal A., to Procter & Gamble Company, The. Treatment of Robusta coffee. 4,226,891, Cl. 426-430.000.
Lewis, Sheldon N.; and Haggard, Richard A., to Rohm and Haas Company. Novel methacrylic polymers having condensation-cross-linkable functionality. 4,226,753, Cl. 260-29.600.
Leybold-Heraeus GmbH: *See—*
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Linden, Heinrich; Heidrich, Jochen; Wegemund, Bernd; and Bornmann, Hans, to Henkel Kommanditgesellschaft auf Aktien. Dispersing of pigments. 4,226,637, Cl. 106-308.00Q.
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Nilsson, Sven R., 4,226,109, Cl. 72-412.000.
Lindroos, Martii K. Water heating stove. 4,226,195, Cl. 110-234.000.
Lindsey, Donnie R. Portable therapeutic water massage mechanism. 4,225,984, Cl. 4-541.000.
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Lisovoi, Jury V.: *See—*
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Littley, John J.; Koors, Carl W.; Fussner, Richard F.; and Lengel, Frank, to Cincinnati Incorporated. Slitter having arbor pairs mounted on a caster supported base shiftable and orientable along the slitter frame. 4,226,151, Cl. 83-479.000.

Littmann, Wolfgang: *See—*
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Ljungberg, Sten H., to Nitro Nobel AB. Primer. 4,226,184, Cl. 102-24.00R.

Lockwood, George S.; Shultz, Fred T.; and Bevelander, Gerrit, to Monterey Abalone Farms. Abalone mariculture. 4,226,210, Cl. 119-4.000.

Loehning, Ralph H.: *See—*
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Loffland Brothers Company: *See—*
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Logan, David J.; and Pavone, Robert J., to Gulf & Western Corporation. Device for translating and rotating a cutting platen with respect to a reciprocal cutter. 4,226,148, Cl. 83-71.000.

Logan, Ralph A., to Bell Telephone Laboratories, Incorporated. Oxide masking of gallium arsenide. 4,226,667, Cl. 156-656.000.

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Loken, Philip I., to Horton Manufacturing Company, Inc. Mechanism for maintaining contact between the driving side of torque transfering surfaces of a first rotatable member and the driven side of matching torque transfering surfaces of a second rotatable member. 4,226,095, Cl. 64-27.0CT.

Lonati, Francesco, to Costruzioni Meccaniche Lonati S.p.A. Pattern drum control device in a circular knitting machine. 4,226,096, Cl. 66-224.000.

Long, Barry W.; and Rye, Grover W., to Goodyear Tire & Rubber Company, The. Nonpneumatic tire and rim assembly. 4,226,273, Cl. 152-326.000.

Longevity Products, Inc.: *See—*
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Love, Jim: *See—*
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Low, Stanley T.: *See—*
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Lowe, Charles T. Banjo construction. 4,226,159, Cl. 84-272.000.

Lubonsky, Fred E., to General Electric Company. Stress-relieved amorphous metal toroid-shaped magnetic core. 4,227,120, Cl. 315-248.000.

Lucas Industries Limited: *See—*
Sharp, Roy T., 4,226,137, Cl. 74-459.000.

Luciani, Luciano; Kashiwa, Norio; Barbe, Pier C.; and Toyota, Akinori, to Montedison S.p.A.; and Mitsui Petrochemical Industries, Ltd. Catalysts for polymerizing alpha-olefins and process for polymerizing alpha-olefins in contact with said catalysts. 4,226,741, Cl. 252-429.00B.

Lueddecke, Donald E.; Mottine, John J., Jr.; and Vesperman, William C., to Western Electric Inc.; and Bell Telephone Laboratories, Incorporated. Telephone cords. 4,227,042, Cl. 174-120.0SR.

Lugovskoi, Vladimir D.: *See—*
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Lund, Svend A.; Iversen, Sven E.; Petersen, Carl E. T.; Bogen, Erik T.; and Dam, Jorgen, to Akademiet for de Tekniske Videnskaber, Svejsecentralen. Apparatus for recording echo pulses. 4,226,122, Cl. 73-609.000.

Lundberg, Robert D.; and Makowski, Henry S., to Exxon Research & Engineering Co. Fibers of ionic thermoplastic polymers. 4,226,751, Cl. 260-23.50A.

Lunzer, Friedrich; and Kepplinger, Werner, to Chemie Linz Aktiengesellschaft. Preparation of crystalline cryolite. 4,226,842, Cl. 423-465.000.

Lupke, Gerd P. H.; and Lupke, Manfred A. A. Apparatus for producing thermoplastic tubing. 4,226,580, Cl. 425-504.000.

Lupke, Manfred A. A.: *See—*
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Luthi, Walter, to Heberlein Maschinenfabrik AG. Device for cooling heated textile yarns of thermoplastic material. 4,226,092, Cl. 62-374.000.

Lutz, Russell L. Carburetor idle jet control. 4,226,218, Cl. 123-325.000.

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Maaijwee, Ludoricus C., to Alcoa Nederland B.V. Racks for the cultivation of mushrooms and similar fungi. 4,226,047, Cl. 47-1.100.

Macchi, Giannino. Bread toaster. 4,226,176, Cl. 99-335.000.

MacDonnell, Gordon: *See—*
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Machlett Laboratories, Inc., The: *See—*
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Madden, Thomas P.: *See—*
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Maeda, Tadao: *See—*
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Maes, Jean P., to s.a. Texaco Belgium n.v. Corrosion probe combination. 4,226,693, Cl. 204-195.00C.

Magata, Yoshihiro; Yoshida, Kobun; and Kato, Itsuo, to Pioneer Electronic Corporation. Auto-repeat mechanism for cassette tape recorder. 4,227,223, Cl. 360-73.000.

Magee, John S., Jr.: *See—*
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Mainardi, Anacleto C., to Kappa Fertilizzanti S.p.A. Apparatus for obtaining biammonium phosphate. 4,226,833, Cl. 422-189.000.

Makihira, Hiroshi: *See—*
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Malakian, Vahe H.; and Hendricks, Howard F., to Transicoil, Inc. Stepper motor and adaptor ring. 4,227,101, Cl. 310-49.00R.

Malcom-Ellis (Liverpool) Limited: *See—*
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Malgeri, Domenico: *See—*
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Malherbe, Roger; and Rasberger, Michael, to Ciba-Geigy Corporation. Piperidyl esters of phenolalkylene carboxylic acids. 4,226,999, Cl. 546-222.000.

Malm, Arthur P. Waste water treatment. 4,226,717, Cl. 210-195.100.

Malo, Russell V.; Gustafson, Gary A.; and Bockrath, Ronald E., to Standard Oil Company (Indiana). Process for upgrading prepolymer particles. 4,226,973, Cl. 528-481.000.

Mamatov, Juldash: *See—*
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Manning, Gilbert B.: *See—*
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Mansukhani, Ishwar R., to Whittaker Corporation. Pigmented jet printing and product. 4,227,200, Cl. 346-75.000.
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Veaute, Georges, 4,226,749, Cl. 260-17.300.
Manus, Ray G. Playground apparatus. 4,226,411, Cl. 272-55.000.
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Marcin, Benjamin G., to Pullman Incorporated. Floatable concrete pallet for lifting and bearing heavy loads. 4,226,203, Cl. 114-65.00A.
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Marcus, Konrad H., to Prince Corporation. Visor assembly. 4,227,241, Cl. 362-61.000.
Marcus, Konrad H., to Prince Corporation. Illuminated visor mirror assembly. 4,227,242, Cl. 362-61.000.
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Marsden, John H.; and Harrison, Norman, to Imperial Chemical Industries Limited. Process for making 4-methyl-4,5-dihydrotetrazolo [1,5-a] quinazolin-5-one. 4,226,994, Cl. 544-251.000.
Marsh, David G. Formalinized allergen-containing substances and production thereof. 4,226,853, Cl. 424-91.000.
Marsh, Frank D., to Du Pont de Nemours, E. I., and Company. α-Chlorination process. 4,226,783, Cl. 260-351.000.
Marshall, Gerald F., to Energy Conversion Devices, Inc. Imaging device. 4,226,522, Cl. 355-1.000.
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Marshall, Winston S.; and Pfeifer, William, to Eli Lilly and Company. Anti-inflammatory agents. 4,226,887, Cl. 424-356.000.
Marsili, Leonardo; Rossetti, Vittorio; and Pasqualucci, Carmine, to Archifar Industrie Chimiche Del Trentino S.p.A. Novel rifamycin compounds of high antibiotic activity. 4,226,765, Cl. 260-239.30P.
Martin, Robert B., to Petrolite Corporation. Process for dehydration and demineralization of diluted bitumen. 4,226,690, Cl. 204-190.000.
Martin, Thomas J., to MacMillan Bloedel Limited. Space dividers. 4,226,357, Cl. 229-15.000.
Martinec, Eugene F.; and Robinson, Nora, to Health-Mor Inc. Multi-motor suction cleaner construction. 4,225,999, Cl. 15-300.00A.
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Maruyama, Jiro; and Suzuki, Seiji, to Hakodate Seimo Sengu Co., Ltd. Fishing net. 4,226,165, Cl. 87-12.000.
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Marvin Glass & Associates: *See*—
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Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See*—
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Masilamani, Divakaran; and Rogic, Milorad M., to Allied Chemical Corporation. Regioselective substitution at carbon atom vinical to doubly bonded tertiary carbon atom by sulfur dioxide catalysts. 4,227,028, Cl. 585-941.000.
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Masuda, Noboru; and Suzuki, Mitsuyuki, to Denki Onkyo Co., Ltd.; and Aisin Seiki Kabushiki Kaisha. Liquid level sensing means. 4,227,171, Cl. 338-33.000.
Masuda, Shin-ichi: *See*—
Matsunaga, Kinjiro; Masuda, Shin-ichi; Nakagawa, Yunosuke; and Takaishi, Naotake, 4,226,748, Cl. 260-17.00A.
Matalon, Ralph. Novel method of making foundry molds and adhesively bonded composites. 4,226,277, Cl. 164-7.000.
Mateja, Eugene V.: *See*—
Kelley, Jerry K.; and Mateja, Eugene V., 4,227,190, Cl. 340-604.000.
Matera, Giancarlo: *See*—
Cazzaro, Giorgio; Malgeri, Domenico; Matera, Giancarlo; and Cavallaro, Antonino, 4,226,824, Cl. 264-182.000.
Mathis, Eldon R. Unattached base for rocking chairs. 4,226,472, Cl. 297-270.000.
Matson, Wayne R., to Environmental Sciences Associates, Inc. Electrochemical processing system. 4,226,695, Cl. 204-231.000.
Matsuhita Electric Industrial Co., Ltd.: *See*—
Watanabe, Masanori; Nonomura, Kinzo; and Takesako, Yoshinobu, 4,227,117, Cl. 315-13.00R.
Matsui, Hirotoshi, to Sharp Kabushiki Kaisha. Type separator in a hammer actuated printer. 4,226,180, Cl. 101-111.000.
Matsui, Makoto: *See*—
Yamamoto, Hideaki; Matsumaru, Haruo; Matsui, Makoto; Tsukada, Toshihisa; Hirai, Tadaaki; and Maruyama, Eiichi, 4,227,078, Cl. 250-227.000.
Matsui, Takeshi: *See*—
Kohama, Tokio; Matsui, Takeshi; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, 4,226,222, Cl. 123-568.000.
Matsumaru, Haruo: *See*—
Yamamoto, Hideaki; Matsumaru, Haruo; Matsui, Makoto; Tsukada, Toshihisa; Hirai, Tadaaki; and Maruyama, Eiichi, 4,227,078, Cl. 250-227.000.
Matsumoto, Akira: *See*—
Tashiro, Takashi; Sugai, Manabu; and Matsumoto, Akira, 4,227,226, Cl. 360-137.000.
Matsunaga, Kinjiro; Masuda, Shin-ichi; Nakagawa, Yunosuke; and Takaishi, Naotake, to Kao Soap Co., Ltd. Fabric sizing emulsion. 4,226,748, Cl. 260-17.00A.
Matsuo, Mitsumasa: *See*—
Yamamoto, Yasunobu; Matsuo, Mitsumasa; and Nakagawa, Atsushi, 4,226,816, Cl. 264-29.400.
Matsushita Electric Industrial Co., Inc.: *See*—
Tashiro, Takashi; Sugai, Manabu; and Matsumoto, Akira, 4,227,226, Cl. 360-137.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Fujisawa, Seiji; and Yukumoto, Toshitaka, 4,227,122, Cl. 315-368.000.
Nishida, Masamitsu; Kawashima, Syunichiro; Ueda, Ichiro; and Ouchi, Hiromu, 4,226,827, Cl. 264-332.000.
Nishikawa, Kowhei, 4,227,225, Cl. 360-128.000.
Mattel, Inc.: *See*—
Ferdinand, Scott A., 4,226,155, Cl. 84-1.030.
Mattfeld, Johann, to Licentia Patent-Verwaltungs-G.m.b.H. Circuit for at least two frequencies. 4,227,156, Cl. 330-126.000.
Matthews, Terrence H.; and White, Brian K., to Mitel Corporation. Electronic component cabinet. 4,227,237, Cl. 361-415.000.
Mattress, Albert, Jr., to Blodgett, Norman S., a part interest. Meter lock. 4,226,102, Cl. 70-164.000.
Matyas, Stephen M.: *See*—
Ehrsam, William F.; Elander, Robert C.; Hollis, Lloyd L.; Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Oseas, Jonathan; and Tuchman, Walter L., 4,227,253, Cl. 375-2.000.
Matyasi, Jozsef: *See*—
Boros, Jozsef; Csillag, Zsolt; Ferenczi, Tibor; Kalman, Tibor; Lengyel, Laszlo; Matyasi, Jozsef; Orban, Ferenc; Solymar, Karoly; Toth, Bela; Toth, Lajos; Voros, Istan; Wentzely, Kalman; Zambo, Janos; and Zoldi, Jozsef, 4,226,838, Cl. 423-121.000.
Mauk, Eugene M. Water release mechanism. 4,225,986, Cl. 4-324.000.
Maurer, Edward H.: *See*—
Thiel, Ronald A.; and Maurer, Edward H., 4,226,899, Cl. 427-101.000.
Maust, Charles I. Security ventilating system. 4,226,049, Cl. 49-57.000.
Maust, Gale E. Beet harvesting machine. 4,226,566, Cl. 414-519.000.
Maydan, Dan; and Shepp, Lawrence A., to Bell Telephone Laboratories, Incorporated. High speed computer assisted tomography. 4,227,088, Cl. 250-445.00T.
Mayercik, Paul M.: *See*—
Campagnuolo, Carl J.; Scheinine, Leon; and Mayercik, Paul M., 4,227,092, Cl. 290-1.00C.
Mayeux, Christian; and Micheron, Francois, to Thomson-CSF. Detector for detecting ionizing radiation. 4,227,082, Cl. 250-336.000.
Mayse, Weldon D.; and Watson, Frederick D., to Petrolite Corporation. Apparatus and process for electrically resolving emulsions. 4,226,689, Cl. 204-188.000.
Mazur, Peter O.; and Pallaver, Carl B., to United States of America, Energy. Adjustable expandable cryogenic piston and ring. 4,226,169, Cl. 92-206.000.
Mazzeo, Charles F.; and Cotler, Catherine K., to Amerace Corporation. Circuit panel connector. 4,226,494, Cl. 339-103.00R.
Mazzocchi, Romano: *See*—
Giannini, Umberto; Cassata, Antonio; Longi, Paolo; and Mazzocchi, Romano, 4,226,963, Cl. 526-114.000.
McAlpine, James B., to Abbott Laboratories. Fortimicin AK. 4,226,979, Cl. 536-17.00R.
McAuliffe, Gerald N.: *See*—
Cavil, David T.; and McAuliffe, Gerald N., 4,227,132, Cl. 318-549.000.
McCaffrey, Felim P., to Hatch Associates Ltd. Equalization system for overhead cranes. 4,226,332, Cl. 212-218.000.
McCain, Wesley G.: *See*—
White, Russell P., Jr., 4,226,716, Cl. 210-193.000.
McCartney, Walter T., to Coal Processing Equipment, Inc. Variable wall and vortex finder hydrocyclone classifier. 4,226,708, Cl. 209-211.000.

McCole, Thomas P.: *See—*
Gervais, Theodore; and McCole, Thomas P., 4,226,519, Cl. 354-174.000.

McCort, Ralph E., to Owens-Corning Fiberglas Corporation. Apparatus for treating fibrous boards. 4,226,662, Cl. 156-390.000.

McCoy, David R., to Texaco Development Corp. Process for making ether sulfonates. 4,226,807, Cl. 260-512.00R.

McCullough, William L. Load supporting frame assembly. 4,226,465, Cl. 296-182.000.

McDaniel, Horace J.; and Young, James A. Collapsible sawhorse. 4,226,301, Cl. 182-155.000.

McElroy, Arthur H. Heater adapter for making polyethylene pipe connections. 4,227,067, Cl. 219-243.000.

McEvoy, Francis J.; and Albright, Jay D., to American Cyanamid Company. Substituted thio-substituted benzyl-propionyl-L-prolines. 4,226,775, Cl. 260-326.330.

McGowan, Francis E.: *See—*
Polk, Todd J.; and McGowan, Francis E., 4,226,239, Cl. 128-303.00A.

McGraw-Edison Company: *See—*
Vandas, Edward B., 4,226,325, Cl. 198-493.000.

McGuire, Kevin C., to Gunderson, Arthur M. Reflective tracing device. 4,226,029, Cl. 35-26.000.

McIntosh, Robert A., Sr.; Bernier, Richard G.; and Estabrooks, David A., to Centronics Data Computer Corporation. Stacking system for fanfold paper and the like. 4,226,410, Cl. 270-61.00F.

McKelvey, Harold E., to Shatterproof Glass Corporation. Method and apparatus for curving glass sheets. 4,226,608, Cl. 65-106.000.

McNamara, John V.; and Van Etten, Paul, to United States of America, Air Force. High speed real time quantizer and analog/digital converter. 4,227,187, Cl. 340-347.00P.

McShane, Lawrence J.: *See—*
Cooper, Robin D. G.; Koppel, Gary A.; and McShane, Lawrence J., 4,226,767, Cl. 260-239.00A.

McSweeney, Lawrence H. Roof drilling system. 4,226,290, Cl. 175-320.000.

McVey, John K.; and Sharp, Larry L., to Illinois Tool Works Inc. Combined thermal and electrical cut-off device. 4,227,169, Cl. 337-182.000.

Meacham, Thomas E., Jr., to Refreshment Machinery Incorporated. Vending machine with self contained water supply. 4,226,267, Cl. 141-18.000.

Mead Corporation, The: *See—*
Stolfo, John J., 4,226,962, Cl. 525-506.000.

Medical Laboratory Automation, Inc.: *See—*
Irazoqui, Carlos A.; and Scordato, Emil A., 4,226,503, Cl. 350-87.000.

Medishield Corporation Limited: *See—*
Steggall, Christopher L., 4,226,390, Cl. 248-124.000.

Medtronic, Inc.: *See—*
Bennett, Robert M., Jr., 4,226,245, Cl. 128-419.0PT.
Coury, Arthur J.; and Wilary, Frank J., 4,226,244, Cl. 128-419.00P.

Meidert, Helmut; Muller, Werner H.; and Pressler, Wilfried, to Hoechst Aktiengesellschaft. 8-Chloro-5,6,7,8-tetrahydro-2-quinolone and 8-bromo-5,6,7,8-tetrahydro-2-quinolone, the hydrochloride or hydrobromide thereof and process for their manufacture. 4,226,997, Cl. 546-157.000.

Meiji Seika Kaisha, Ltd.: *See—*
Goi, Hitoshi; Miyado, Shinji; Shomura, Takashi; Suzuki, Akira; Niwa, Tomizo; and Yamada, Yujiro, 4,226,941, Cl. 435-280.000.

Meiji Selka Kaisha, Ltd.: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Suzuki, Akira; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,226,610, Cl. 71-86.000.

Meiller, Hermann; Hocke, Horst; Kunst, Otto; and Hartl, Paul, to Messrs. Willibald Grammer. Retractor for safety belts. 4,226,385, Cl. 242-107.40R.

Meldahl, Robert D.; and Borel, Robert J., to J. A. Masterson & Co. Clutch-brake system for rotary mower. 4,226,313, Cl. 192-18.00R.

Memeger, Wesley, Jr., to Du Pont de Nemours, E. I., and Company. Wholly aromatic polyamide foam. 4,226,949, Cl. 521-184.000.

Mende, Hanns; Beuler, Helmut; and Glaum, Rolf, to Luwa AG. Method and apparatus for the decontamination of a liquid containing contaminants. 4,226,678, Cl. 202-161.000.

Mendoza, Fausto C. Process and apparatus for the instantaneous combustion of diafanous liquid petroleum, diesel or similar fuels. 4,226,582, Cl. 431-239.000.

Meneghetti, Leno M.: *See—*
Cain, Huey A.; and Meneghetti, Leno M., 4,226,711, Cl. 210-691.000.

Mentzel, Bodo: *See—*
Janz, Joachim; and Mentzel, Bodo, 4,226,464, Cl. 296-153.000.

Merck & Co., Inc.: *See—*
Bolhofer, William A.; and Prugh, John D., 4,226,871, Cl. 424-263.000.
Christensen, Burton G.; and Ratcliffe, Ronald W., 4,226,866, Cl. 424-248.510.
Christensen, Burton G.; Hannah, John; Leanza, William J.; Ratcliffe, Ronald W.; and Shih, David H., 4,226,870, Cl. 424-263.000.
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 4,226,867, Cl. 424-246.000.

Merger, Franz: *See—*
Fouquet, Gerd; Merger, Franz; and Baer, Karl, 4,226,780, Cl. 260-348.160.

Merrell Toraude et Compagnie: *See—*
Giroux, Eugene L.; Prakash, Nellikunja J.; and Schechter, Paul J., 4,226,882, Cl. 424-285.000.

Messenger, Edward J., to Garlock Inc. Semi-unitized shaft seal. 4,226,426, Cl. 277-37.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Nissl, Norbert, 4,226,120, Cl. 73-517.00R.
Schulz, Ralf-Thilo; Brunsch, Klaus; and Woerndle, Rudolf, 4,226,916, Cl. 428-542.000.

Messrs. Willibald Grammer: *See—*
Meiller, Hermann; Hocke, Horst; Kunst, Otto; and Hartl, Paul, 4,226,385, Cl. 242-107.40R.

Meyer, Carl H. W.: *See—*
Ehrsam, William F.; Elander, Robert C.; Hollis, Lloyd L.; Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Oseas, Jonathan; and Tuchman, Walter L., 4,227,253, Cl. 375-2.000.

Meyers, William G. Apparatus and tool for cutting animal carcasses by impinging air jets. 4,226,005, Cl. 17-1.00R.

Michaels, Dennis C.; and Michaels, John W., to D.J.L.J., Inc. Viewing and angling device for ice fishing. 4,226,508, Cl. 350-319.000.

Michaels, John W.: *See—*
Michaels, Dennis C.; and Michaels, John W., 4,226,508, Cl. 350-319.000.

Michalko, Edward; and deRosset, Armand J., to UOP Inc. Silica guard bed for adsorbent used in an aqueous system. 4,226,639, Cl. 127-46.00A.

Micheron, Francois: *See—*
Mayeux, Christian; and Micheron, Francois, 4,227,082, Cl. 250-336.000.

Micro-Cel Systems, Inc.: *See—*
Lakes, A. Dale, 4,226,886, Cl. 428-304.000.

Micro-Mega S.A.: *See—*
Leonard, Henri, 4,226,591, Cl. 433-133.000.

Microwave Semiconductor Corp.: *See—*
Fitzgerald, William, 4,227,036, Cl. 174-16.0HS.

Migliarini, Cesare: *See—*
Pirovano, Dante; and Migliarini, Cesare, 4,226,663, Cl. 156-422.000.

Mike, Andrew. Renewable vaporizer for air treatment and the like. 4,226,829, Cl. 422-123.000.

Mikkor, Mati, to Ford Motor Company. Volume efficient sodium sulfur battery. 4,226,923, Cl. 429-104.000.

Mikoshiba, Hiroaki, to Nippon Electric Co., Ltd. Semiconductor device having a polycrystalline silicon diode. 4,227,203, Cl. 357-59.000.

Miles Laboratories, Inc.: *See—*
Boguslaski, Robert C.; Carrico, Robert J.; and Burd, John F., 4,226,978, Cl. 536-4.000.
Buckler, Robert T.; and Schroeder, Hartmut R., 4,226,992, Cl. 544-234.000.
Buckler, Robert T.; and Schroeder, Hartmut R., 4,226,993, Cl. 544-237.000.

Miller, Charles G.: *See—*
Frosch, Robert A.; Miller, Charles G.; and Stephens, James B., 4,226,475, Cl. 299-13.000.

Miller, Donald E.; and Werstak, Charles E., to SCM Corporation. Flavored spreadable emulsion. 4,226,895, Cl. 426-658.000.

Miller, Gabriel L., to Bell Telephone Laboratories, Incorporated. Electromechanical parametric amplifier for measurement of electric fields. 4,227,147, Cl. 324-72.000.

Miller, Georgia R.: *See—*
Helesfai, Steven, 4,226,013, Cl. 29-235.000.

Miller, Guy W.: *See—*
Norris, James R.; Miller, Guy W.; Jamison, John C.; and Ransom, Ralph D., 4,226,365, Cl. 239-66.000.

Miller, Harry C.: *See—*
Helesfai, Steven, 4,226,013, Cl. 29-235.000.

Miller, Robert S.: *See—*
Goodman, Donald; Koral, Marvin; Miller, Robert S.; and Stanaback, Robert J., 4,226,974, Cl. 528-483.000.
Goodman, Donald; Koral, Marvin; Miller, Robert S.; and Stanaback, Robert J., 4,226,975, Cl. 528-483.000.
Goodman, Donald; Koral, Marvin; Miller, Robert S.; and Stanaback, Robert J., 4,226,976, Cl. 528-498.000.

Miller, Sammy L.: *See—*
Humes, Calvin, Jr.; Miller, Sammy L.; and Kindig, Alan L., 4,227,103, Cl. 310-71.000.

Miller W. Corporation: *See—*
Bieker, Ron D., 4,226,293, Cl. 180-9.500.

Milligan, Orley B. Wood burning stove for heating homes. 4,226,224, Cl. 126-83.000.

Milliken Research Corporation: *See—*
Kluger, Edward W.; and Su, Tien K., 4,226,737, Cl. 252-182.000.

Millward, John D., to Rank Organisation Limited, The. CRT film scanner with compensation for local brightness variations of scanning beam. 4,227,207, Cl. 358-54.000.

Milwaukee Faucets, Inc.: *See—*
Schmitt, William C., 4,226,260, Cl. 137-315.000.

Minchev, Pavel M.: *See—*
Nikolov, Ivan D.; Minchev, Pavel M.; Dimitrov, Marin A.; Georgiev, Assen P.; and Chorbov, Iliya G., 4,227,033, Cl. 13-27.000.

Minnesota Mining and Manufacturing Company: *See—*
Dahlen, Richard R.; Hansen, Richard L.; and Weiher, Richard L., 4,226,910, Cl. 428-336.000.
Kanten, Thomas M., 4,226,909, Cl. 428-329.000.
Kinderman, Gerard H.; Rutledge, Robert L.; and Steelman, Ronald S., 4,226,927, Cl. 430-14.000.

Theiler, Werner C., Sr., 4,225,990, Cl. 7-107.000.
Thielen, James E., 4,225,998, Cl. 15-231.000.
Minolta Camera Kabushiki Kaisha: *See*—
Murata, Tomoji; Shibazaki, Kenji; and Ito, Hideo, 4,227,119, Cl. 315-151.000.
Uesugi, Kyozo, 4,226,520, Cl. 354-195.000.
Minoura, Kazuo; and Tateoka, Masamichi, to Canon Kabushiki Kaisha. Scanning optical system with reflective lens. 4,226,500, Cl. 350-6.100.
Miram, George V.; and Kuehne, Gerhard B., to Varian Associates, Inc. Zero-bias gridded gun. 4,227,116, Cl. 313-447.000.
Miramanian, Akop A.: *See*—
Zeinalov, Bagadur K.; Aliev, Vagab S.; Akhundov, Arif A.; Bocharov, Jury N.; Lugovskoi, Vladimir D.; and Miramanian, Akop A., 4,227,020, Cl. 562-511.000.
Mita Industrial Company, Ltd.: *See*—
Nakazawa, Toru; Nagahashi, Keiichi; and Aizawa, Tatsuo, 4,226,928, Cl. 430-57.000.
Mitchell, James, to Saskatchewan Power Corporation. Vibration isolator connector. 4,227,038, Cl. 174-42.000.
Mitel Corporation: *See*—
Matthews, Terrence H.; and White, Brian K., 4,227,237, Cl. 361-415.000.
Mitome, Shuhei: *See*—
Vandiver, John K.; and Mitome, Shuhei, 4,226,554, Cl. 405-195.000.
Mitsubishi Chemical Industries Ltd.: *See*—
Okamoto, Shosuke; Kikumoto, Ryoji; Tamao, Yoshikuni; Tonomura, Shinji; and Ohkubo, Kazuo, 4,227,006, Cl. 560-10.000.
Shigematsu, Taichiro; Shibahara, Tetsuya; Kasugai, Hiroshi; Nakajima, Tetsuo; and Motojima, Shozo, 4,226,855, Cl. 424-177.000.
Tanaka, Toru; Okano, Shigeaki; and Tanaka, Eiji, 4,226,964, Cl. 526-114.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Imataki, Mitsumasa, 4,227,229, Cl. 361-117.000.
Ohta, Kazutoshi; and Takano, Hironori, 4,226,078, Cl. 57-213.000.
Mitsubishi Kinzoku Kabushiki Kaisha: *See*—
Shudo, Taro; Kudo, Bosshi; and Tamai, Yasushi, 4,226,834, Cl. 422-249.000.
Mitsui Petrochemical Industries, Ltd.: *See*—
Luciani, Luciano; Kashiwa, Norio; Barbe, Pier C.; and Toyota, Akinori, 4,226,741, Cl. 252-429.00B.
Mitsui Toatsu Chemicals, Incorporated: *See*—
Kawamata, Motoo; Kiyoura, Tadamitsu; Ohshima, Kazushi; Kogure, Yasuo; Kudoh, Akihide; and Kotani, Makoto, 4,227,023, Cl. 568-804.000.
Miyata, Katsuharu; Aiga, Makoto; and Hasegawa, Seiji, 4,227,008, Cl. 560-25.000.
Mitterbauer, Franz: *See*—
Wittmann, Franz; and Mitterbauer, Franz, 4,226,470, Cl. 297-108.000.
Miura, Yushichi: *See*—
Saito, Akira; Miura, Yushichi; and Bando, Koichiro, 4,226,677, Cl. 202-138.000.
Miyado, Shinji: *See*—
Goi, Hitoshi; Miyado, Shinji; Shomura, Takashi; Suzuki, Akira; Niwa, Tomizo; and Yamada, Yujiro, 4,226,941, Cl. 435-280.000.
Miyagawa, Tuyoshi, to Laurel Bank Machine Co., Ltd. Check number counter device for paper counting machine. 4,227,073, Cl. 235-92.0SB.
Miyagawa, Tuyoshi, to Laurel Bank Machine Co., Ltd. Counting section shielding device for paper sheet counting machine. 4,227,074, Cl. 235-92.0SB.
Miyakawa, Seiichi: *See*—
Sakamoto, Koji; Miyakawa, Seiichi; and Tatsumi, Susumu, 4,226,525, Cl. 355-14.00D.
Miyata, Katsuharu; Aiga, Makoto; and Hasegawa, Seiji, to Mitsui Toatsu Chemicals, Incorporated. Process for preparing aromatic urethanes. 4,227,008, Cl. 560-25.000.
Miyazaki, Kenichi: *See*—
Takanashi, Itsuo; Motoyama, Koichiro; Miyoshi, Tadayoshi; Nakagaki, Shintaro; Yokokawa, Sumio; and Miyazaki, Kenichi, 4,227,208, Cl. 358-55.000.
Miyoshi, Tadayoshi: *See*—
Takanashi, Itsuo; Motoyama, Koichiro; Miyoshi, Tadayoshi; Nakagaki, Shintaro; Yokokawa, Sumio; and Miyazaki, Kenichi, 4,227,208, Cl. 358-55.000.
Mizutani, Yukio; Watanabe, Yoshiaki; and Taga, Genji, to Tokuyama Soda Kabushiki Kaisha. Production of calcium silicate having high specific bulk volume and calcium silicate-gypsum composite. 4,226,636, Cl. 106-306.000.
Mobil Oil Corporation: *See*—
Armstrong, Eldon L.; and Leonardi, Samuel J., 4,226,733, Cl. 252-42.700.
Graven, Richard G.; and Sailor, Robert A., 4,226,701, Cl. 208-121.000.
Mochida, Kenichi: *See*—
Sato, Moriyuki; Mochida, Kenichi; Yoshiie, Shigeo; and Mori, Yasuki, 4,226,980, Cl. 536-17.00R.
Mochizuki, Katura: *See*—
Hashimoto, Shigeru; Masuda, Akira; Mochizuki, Katura; Satoh, Akira; Takeuchi, Koshi; and Oda, Teruhisa, 4,226,505, Cl. 350-252.000.
Moench, Frank F. Asphaltic pavement treating apparatus and method. 4,226,552, Cl. 404-92.000.
Mogab, Cyril J., to Bell Telephone Laboratories, Incorporated. Device fabrication by plasma etching. 4,226,665, Cl. 156-643.000.
Mogi, Takao, to Sony Corporation. Circuit for use in remote control of a signal receiver. 4,227,259, Cl. 455-352.000.
Mohan, Arthur G.: *See*—
Rauhut, Michael M.; Tseng, Shin-Shyong; and Mohan, Arthur G., 4,226,738, Cl. 252-188.3CL.
Molins Limited: *See*—
Watson, John T., 4,226,352, Cl. 225-100.000.
Moll, Hans; and Flesche, Klaus, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Truck, especially a large capacity vehicle or tractor semi-trailer combination. 4,226,466, Cl. 296-190.000.
Molloy, R. Michael: *See*—
Babcock, Donner F.; Deber, Charles M.; Debono, Manuel; Molloy, R. Michael; and Pfeiffer, Douglas R., 4,227,002, Cl. 548-216.000.
Debono, Manuel; and Molloy, R. Michael, 4,227,003, Cl. 548-216.000.
Molnar, Martin A. Plant growing assembly. 4,226,048, Cl. 47-81.000.
Momany, Frank A., to Beckman Instruments, Inc. Synthetic peptides having pituitary growth hormone releasing activity. 4,226,857, Cl. 424-177.000.
Mombre, Karl W., to Ortlinhaus-Werke GmbH. Combined clutch and double-action braking device. 4,226,314, Cl. 192-18.00A.
Momose, Denichi: *See*—
Iizuka, Kinji; Akahane, Kenji; Momose, Denichi; Kamijo, Yukio; and Ajisawa, Yukiyoshi, 4,226,878, Cl. 424-273.00R.
Mondy, Andre: *See*—
Duquenne, Claude; and Mondy, Andre, 4,226,427, Cl. 277-80.000.
Monsanto Company: *See*—
Alt, Gerard H., 4,226,615, Cl. 71-121.000.
Brower, Van Pelt; Esposito, Robert A.; and Soar, Thomas E., 4,226,818, Cl. 264-40.100.
Coran, Aubert Y.; and Patel, Raman P., 4,226,953, Cl. 525-193.000.
Dyroff, David R.; and Papanu, Victor D., 4,226,959, Cl. 525-401.000.
Dyroff, David R.; and Papanu, Victor D., 4,226,960, Cl. 525-401.000.
Franz, John E.; and Kaufman, Robert J., 4,226,611, Cl. 71-87.000.
Van Eenam, Donald N., 4,226,957, Cl. 525-336.000.
Wei, Nan, 4,226,942, Cl. 521-56.000.
Monte, Anthony J.; and Wahoski, Ernest C. Miniature target vehicle. 4,226,292, Cl. 180-6.500.
Montedison S.p.A.: *See*—
Giannini, Umberto; Cassata, Antonio; Longi, Paolo; and Mazzocchi, Romano, 4,226,963, Cl. 526-114.000.
Luciani, Luciano; Kashiwa, Norio; Barbe, Pier C.; and Toyota, Akinori, 4,226,741, Cl. 252-429.00B.
Venturello, Carlo; and D'Aloisio, Rino, 4,226,778, Cl. 260-340.200.
Monterey Abalone Farms: *See*—
Lockwood, George S.; Shultz, Fred T.; and Bevelander, Gerrit, 4,226,210, Cl. 119-4.000.
Montgomery, Dean P., to Phillips Petroleum Company. Reactivation of arsenic-poisoned noble metal catalyst for removal of acetylene. 4,227,025, Cl. 585-259.000.
Moreau, Robert D.: *See*—
Haas, Howard C.; and Moreau, Robert D., 4,227,013, Cl. 560-190.000.
Morey, Everett D., to General Electric Company. Clothes washing method. 4,225,992, Cl. 8-158.000.
Morgan Adhesives Company: *See*—
Carlson, Russell L.; Eastin, David L.; Loehning, Ralph H.; and Stalker, William E., 4,226,658, Cl. 156-247.000.
Morgan, George H., to Lambert Brake Corporation. Hydraulically actuated cone clutch. 4,226,318, Cl. 192-85.0CA.
Mori, Kiyosuke: *See*—
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Mori, Yasuki: *See*—
Sato, Moriyuki; Mochida, Kenichi; Yoshiie, Shigeo; and Mori, Yasuki, 4,226,980, Cl. 536-17.00R.
Morinaga Milk Industry Co., Ltd.: *See*—
Ogasa, Katsuhiro; Kuboyama, Morio; Saito, Minoru; Kudo, Tsutomu; Harada, Yoshitsugu; Kawashiri, Akio; and Takahashi, Eiji, 4,226,847, Cl. 424-12.000.
Morisawa, Kunio; and Kyushima, Tatsuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic transmission casing. 4,226,200, Cl. 74-606.00R.
Morita, Isamu: *See*—
Tomita, Takao; and Morita, Isamu, 4,226,408, Cl. 267-64.00B.
Morita, Keiichi: *See*—
Tsuruoka, Masao; Yagi, Hideyuki; Morita, Keiichi; and Kuniya, Keiichi, 4,226,917, Cl. 428-111.000.
Morito, Hiroshi; and Yamashita, Kenji, to Nippon Electric Co., Ltd. Digital processing vertical synchronization system for a television receiver set. 4,227,214, Cl. 358-148.000.
Morrison, Howard J.: *See*—
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Moseley, Meekie D., Jr. Magnetic junk retriever. 4,226,285, Cl. 166-65.00M.
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Moshier, Stephen L., to Dialog Systems, Inc. Continuous speech recognition method. 4,227,176, Cl. 340-146.30R.
Moshier, Stephen L., to Dialog Systems, Inc. Continuous speech recognition method. 4,227,177, Cl. 340-146.30R.

Moskowitz, David: *See*—
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Motegi, Masahiko; Tanaka, Kazuhiro; and Fujita, Saburo, to Toray Industries, Inc. Method for manufacturing polyester films. 4,226,826, Cl. 264-235.800.

Motojima, Shozo: *See*—
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Motorola, Inc.: *See*—
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Motoyama, Koichiro: *See*—
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Mottine, John J., Jr.: *See*—
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Motz, Gary S., to General Electric Company. Transparent compositions of bisphenol-A-polycarbonate, polyalkylene terephthalate and an aromatic polyester carbonate. 4,226,961, Cl. 525-439.000.

Moulene, Jean-Louis: *See*—
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Mountney, Bruce D.; and Wirsig, Ralph C., to Du Pont Canada Inc. Heather yarn made by combining polyester and polyamide yarns. 4,226,079, Cl. 57-288.000.

Mouri, Shingo; and Ueda, Nobuo, to Laurel Bank Machine Co., Ltd. Coin selecting and counting machine. 4,226,254, Cl. 133-8.00E.

Muanyagipari Kutato Intezet: *See*—
Dimitrov, Miklos; Keleman nee Gulyas, Franciska K.; Marko, Richard; Pazonyi, Tamas; Pukanszky, Bela; and Riczko, Andras, 4,226,750, Cl. 260-23.00H.

Muchow, John D., to Valve Concepts International. Erosion control trim in a control mechanism for a ball valve. 4,226,263, Cl. 137-614.170.

Muegge, Harry; and Steil, Klaus-Peter, to Siemens Aktiengesellschaft. Device for advancing a workpiece in electro-erosive processing by a wire-like electrode. 4,227,064, Cl. 219-69.00W.

Mueller, Peter: *See*—
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Mulach, Arthur, to Westinghouse Electric Corp. System for providing uniform axial expansion of a stator core. 4,227,109, Cl. 310-258.000.

Muller, Werner H.: *See*—
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Mullet, David L.; Rilling, Raymond J.; and Voth, Elmer D., to Excel Industries, Inc. Lawnmower deck. 4,226,074, Cl. 56-320.200.

Munter, Ernst A., to Northern Telecom Limited. PCM Tone signal generator. 4,227,248, Cl. 370-110.000.

Murakami, Takeshi: *See*—
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Murata Manufacturing Co., Ltd.: *See*—
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Murata, Tomoji; Shibazaki, Kenji; and Ito, Hideo, to Minolta Camera Kabushiki Kaisha. Controlled lighting device. 4,227,119, Cl. 315-151.000.

Murdock, Keith C.; Durr, Frederick E.; Damiani, Martin R.; and Izzo, Patrick T., to American Cyanamid Company. Method of stimulating the immune response with halogenated 10-(ω-dialkylaminopolymethyleneamino)-2-methoxypyrido[3,2-b]quinolines. 4,226,869, Cl. 424-258.000.

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Murphy, James A.: *See*—
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Muskegon Piston Ring Company: *See*—
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Muth, James E. Post puller. 4,226,402, Cl. 254-30.000.

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Myers, Douglas R. Pallet for transporting and displaying merchandise. 4,226,192, Cl. 108-53.100.

N/S Car Wash Enterprises, Inc.: *See*—
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Naf, Ferdinand, to Firmenich, S.A. 5,9-Dimethyl-deca-4,9-dien-1-al perfume compositions. 4,226,744, Cl. 252-522.00R.

Nagabhushan, Tattanahalli L., to Schering Corporation. 1-Aryl-2-dihalogenodeuteriоalkanoylamido-1,3-propanediol antibacterial agents. 4,226,808, Cl. 260-562.00B.

Nagahara, Hajime: *See*—
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Nagahashi, Keiichi: *See*—
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Nagai, Tsuneji; Machida, Yoshiharu; Suzuki, Yoshiki; and Ikura, Hiroshi, to Teijin Limited. Method and preparation for administration to the mucosa of the oral or nasal cavity. 4,226,848, Cl. 424-19.000.

Nagano, Masashi; and Isobe, Mitsuhide, to Shimano Industrial Company, Limited. Rear derailleur for a bicycle. 4,226,132, Cl. 474-82.000.

Nagano, Masashi; and Sonoi, Koya, to Shimano Industrial Company, Limited. Bicycle hub. 4,226,317, Cl. 192-64.000.

Nagata, Wataru: *See*—
Narisada, Masayuki; Tsuji, Teruji; Yoshioka, Mitsuru; Hiromu, Matsumura; Hamashima, Yoshio; Hayashi, Sadao; and Nagata, Wataru, 4,226,864, Cl. 424-248.500.

Nagata, Yuuichi, to Nippon Gakki Seizo Kabushiki Kaisha. Audio signal transmission circuit having a constant level tone-controlled output signal. 4,227,048, Cl. 179-1.00D.

Nagel, Dieter H.: *See*—
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Nagel, Judy P.: *See*—
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Nagumo, Fumio, to Sony Corporation. Solid state television camera. 4,227,206, Cl. 358-44.000.

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Nakagaki, Shintaro: *See*—
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Nakagawa, Yasuo; Makihira, Hiroshi; and Hamada, Toshimitsu, to Hitachi, Ltd. Cylindrical body appearance inspection apparatus. 4,226,539, Cl. 356-445.000.

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Nakahara, Yutaka; Haruna, Tohru; and Tazima, Kenji, to Argus Chemical Corp. Process for preparing 3-alkylthiopropionic acid esters. 4,226,991, Cl. 544-221.000.

Nakajima, Akira; and Ichikawa, Akira, to Hitachi, Ltd. Pre-processing system for speech recognition. 4,227,046, Cl. 179-1.0SD.

Nakajima, Tetsuo: *See*—
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Nakamizo, Keiichi, to Kawasaki Jukogyo Kabushiki Kaisha. Device for sealing electric wires. 4,226,432, Cl. 277-212.00F.

Nakanishi, Sadayuki, to Kobe Steel, Limited. Ball valve. 4,226,258, Cl. 137-208.000.

Nakanishi, Takuji; Toshima, Tomoyuki; and Yanagisawa, Keiichi, to Nippon Telegraph and Telephone Public Corporation. Method for manufacturing a floating type thin film magnetic head. 4,226,018, Cl. 29-603.000.

Nakayama, Shozo; Hattori, Mitsuhiro; and Ono, Makoto, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Valve assembly for a multi-cylinder swash plate type compressor. 4,226,572, Cl. 417-269.000.

Nakazawa, Toru; Nagahashi, Keiichi; and Aizawa, Tatsuo, to Mita Industrial Company, Ltd. Laminated photosensitive material for electrophotography. 4,226,928, Cl. 430-57.000.

Nalco Chemical Company: *See*—
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Narisada, Masayuki; Tsuji, Teruji; Yoshioka, Mitsuru; Hiromu, Matsumura; Hamashima, Yoshio; Hayashi, Sadao; and Nagata, Wataru, to Shionogi & Co., Ltd. 7-Substituted aminoacetamido oxadethiacephalosporins. 4,226,864, Cl. 424-248.500.

Narukawa, Satoshi: *See*—
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Natalicio, John C. Gelatin capsule holder. 4,226,459, Cl. 294-99.00R.

National Institute for Metallurgy: *See*—
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Neill, Ronald; and Pigeon, Marcel, to L. A. Cellophane. Process of making lithographic plate, and plate from photosensitive element. 4,226,931, Cl. 430-302.000.
Nelan, Donald R., to Eastman Kodak Company. Process for dehydrogenation of sterols to produce Δ4-3-ketosteroids. 4,226,785, Cl. 260-397.250.
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Niedermeyer, William P. Thermal overload release for solar energy collectors. 4,226,225, Cl. 126-422.000.
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Nilsson, Sven R., to Lindova Aktiebolag. Tool for the stamping of holes or the like in sheet material such as metal plate. 4,226,109, Cl. 72-412.000.
Nimmo, William M.; and Jarrett, Richard, to Marconi Company Limited, The. Load moving devices. 4,227,197, Cl. 343-878.000.
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Nishida, Keijiro; Kakei, Mitsuo; Kamiya, Osamu; and Sekimura, Nobuyuki, to Canon Kabushiki Kaisha. Vapor deposition apparatus. 4,226,208, Cl. 118-706.000.
Nishida, Masamitsu; Kawashima, Syunichiro; Ueda, Ichiro; and Ouchi, Hiromu, to Matsushita Electric Industrial Co., Ltd. Method for preparing piezoelectric ceramics. 4,226,827, Cl. 264-332.000.
Nishida, Nobuo. Ornamental part for watches and method of producing the same. 4,226,082, Cl. 368-285.000.
Nishikawa, Kowhei, to Matsushita Electric Industrial Co., Ltd. Magnetic head assembly. 4,227,225, Cl. 360-128.000.
Nishikawa, Masaji; and Kasuga, Muneo, to Olympus Optical Company Limited. Corona discharge device for electrographic apparatus. 4,227,233, Cl. 361-225.000.
Nishimatsu, Akira: *See—*
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Nixon, Ralph D., to English Electric Valve Company Limited. Radiation shutters. 4,227,210, Cl. 358-113.000.
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Yun, Han B.; and Whitton, Alfred J., 4,226,754, Cl. 260-29.6TA.
Nogami, Tomoyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Brake pressure control device of deceleration responsive type. 4,226,480, Cl. 303-24.00C.
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Norris, James R.; Miller, Guy W.; Jamison, John C.; and Ransom, Ralph D., to United Technologies Corporation. Fuel distribution valve for a gas turbine engine. 4,226,365, Cl. 239-66.000.
Northern Telecom Limited: *See—*
Munter, Ernst A., 4,227,248, Cl. 370-110.000.
Nortoft, Gunnar P. Irrigation systems. 4,226,366, Cl. 239-69.000.

Nowacki, Jan-Erik A., to Studsvik Energiteknik AB. Heat pump containing a piston compressor and driven by a piston engine. 4,226,091, Cl. 62-323.000.

Nozaki, Hiroshi: *See*—
Teshima, Toru; Nozaki, Hiroshi; Koyama, Minoru; and Katoh, Kazuhisa. 4,226,929, Cl. 430-57.000.

Nuclear Power Company Limited: *See*—
Barnes, Sidney, 4,226,676, Cl. 176-38.000.

Nutter, John F., to Tosco Corporation. Method and apparatus for conservation of heat from sludge produced by a retort. 4,226,699, Cl. 208-11.00R.

N.V. Optische Industrie "De Oude Delft": *See*—
Oosten, Hendrik v.; and Verbeek, Willem J. P. A., 4,226,512, Cl. 352-115.000.

O'Connor Engineering Laboratories, Inc.: *See*—
Ishikawa, Tokihiko, 4,226,584, Cl. 432-77.000.

Oda, Teruhisa: *See*—
Hashimoto, Shigeru; Masuda, Akira; Mochizuki, Katura; Satoh, Akira; Takeuchi, Koshi; and Oda, Teruhisa, 4,226,505, Cl. 350-252.000.

Oeding, Volker; Pfaff, Werner; Vertesy, Laszlo; and Weidenmuller, Hans-Ludwig, to Hoechst Aktiengesellschaft. α-Amylase inhibitor from a streptomycete and process for its preparation. 4,226,764, Cl. 260-112.00R.

Oeser, Heinz-Guenter; Koenig, Karl-Heinz; and Mangold, Dietrich, to BASF Aktiengesellschaft. Preparation of substituted fluorobenzenes. 4,226,811, Cl. 568-937.000.

Oestreich, Ulrich, to Siemens Aktiengesellschaft. Method for the continuous production of an optical transmission element. 4,226,653, Cl. 156-73.500.

Off, Joseph W. A.; Early, Judson H.; and Greer, William B., to Haggar Company. Apparatus and method for prefabricating pockets. 4,226,661, Cl. 156-358.000.

Oganesian, Rafik B. Method of producing Keramzit. 4,226,819, Cl. 264-43.000.

Ogasa, Katsuhiro; Kuboyama, Morio; Saito, Minoru; Kudo, Tsutomu; Harada, Yoshitsugu; Kawashiri, Akio; and Takahashi, Eiji, to Morinaga Milk Industry Co., Ltd. Latex polymer sensitized with steroid-serum albumin conjugate, preparation and test therewith. 4,226,847, Cl. 424-12.000.

Ogasawara, Hiroomi; and Ogasawara, Masaomi. Minute change detecting system. 4,227,182, Cl. 340-870.370.

Ogasawara, Masaomi: *See*—
Ogasawara, Hiroomi; and Ogasawara, Masaomi, 4,227,182, Cl. 340-870.370.

Ogawa, Seishi, to Tokyo Shibaura Denki Kabushiki Kaisha. Driving mechanisms for vacuum circuit breakers. 4,227,059, Cl. 200-153.00G.

O'Hanlon, Peter J.: *See*—
Rogers, Norman H.; and O'Hanlon, Peter J., 4,226,880, Cl. 424-283.000.

Ohara, Tadao. Smelting furnace. 4,226,588, Cl. 432-138.000.

Ohkubo, Kazuo: *See*—
Okamoto, Shosuke; Kikumoto, Ryoji; Tamao, Yoshikuni; Tonomura, Shinji; and Ohkubo, Kazuo, 4,227,006, Cl. 560-10.000.

Ohloff, Gunther: *See*—
Kovats, Ervin; Demole, Edouard; Ohloff, Gunther; and Stoll, Max, deceased, 4,226,892, Cl. 426-538.000.

Ohmura, Kaoru: *See*—
Shibasaki, Ichiro; Ohmura, Kaoru; Kimura, Takeo; and Kobayashi, Hidehiko, 4,227,039, Cl. 174-68.500.

Ohr, Jack, to United States of America, Navy. Solubilization of hexavalent chromium compounds in organic materials. 4,226,624, Cl. 106-14.050.

Ohshima, Kazushi: *See*—
Kawamata, Motoo; Kiyoura, Tadamitsu; Ohshima, Kazushi; Kogure, Yasuo; Kudoh, Akihide; and Kotani, Makoto, 4,227,023, Cl. 568-804.000.

Ohta, Kazutoshi; and Takano, Hironori, to Mitsubishi Denki Kabushiki Kaisha. Wire rope. 4,226,078, Cl. 57-213.000.

Oiwa, Ruiko: *See*—
Omura, Satoshi; Kitao, Chiaki; Nakagawa, Akira; Tanaka, Haruo; Awaya, Juichi; and Oiwa, Ruiko, 4,226,879, Cl. 424-278.000.

Oka, Akira: *See*—
Kazama, Kazuo; Oka, Akira; Shigihara, Masayoshi; and Shinbashi, Sueo, 4,226,491, Cl. 339-17.0LM.

Okada, Hitoshi: *See*—
Umezawa, Hiroyuki; Ito, Yukio; Takai, Kazuki; and Okada, Hitoshi, 4,227,224, Cl. 360-96.500.

Okamoto, Shosuke; Kikumoto, Ryoji; Tamao, Yoshikuni; Tonomura, Shinji; and Ohkubo, Kazuo, to Mitsubishi Chemical Industries Ltd. N^2-Dansyl-L-arginine derivatives, and the pharmaceutically acceptable acid addition salts thereof. 4,227,006, Cl. 560-10.000.

Okano, Shigeaki: *See*—
Tanaka, Toru; Okano, Shigeaki; and Tanaka, Eiji, 4,226,964, Cl. 526-114.000.

O'Keefe, Gerald T., to Quadracast Systems, Inc. AM Broadcast tuner with automatic gain control. 4,227,256, Cl. 455-251.000.

Okura, Akimitsu; Saito, Syobu; and Ukiana, Motohide, to Hitachi, Ltd. Device for shifting frozen specimen, for use in scanning type electron microscope. 4,227,080, Cl. 250-311.000.

Okuyama, Hiroshi: *See*—
Yamagis, Kikuo; Okuyama, Hiroshi; and Kawaguchi, Hideo, 4,226,825, Cl. 264-235.000.

Olin Corporation: *See*—
Doerr, Richard L., 4,226,597, Cl. 8-582.000.
Katz, Lawrence E.; Gay, Walter A.; and Schroeder, Hansjuergen A., 4,226,609, Cl. 71-64.00F.
Scardera, Michael; and Gavin, David F., 4,226,794, Cl. 556-443.000.

Oliver, Melvin D. Removable protector for locks. 4,226,104, Cl. 70-455.000.

Ollivier, Jean-Paul; and Strassel, Albert, to Produits Chimiques Ugine Kuhlmann. Polymethyl methacrylate-polyvinylidene fluoride laminates and method. 4,226,904, Cl. 428-212.000.

Olmstead, John A., to RCA Corporation. Engine timing circuit with noise immunity. 4,226,219, Cl. 123-424.000.

Olt, Arthur E., Jr.: *See*—
Boyer, Ronald G.; and Olt, Arthur E., Jr., 4,227,239, Cl. 361-422.000.

Olympus Optical Company Limited: *See*—
Nishikawa, Masaji; and Kasuga, Muneo, 4,227,233, Cl. 361-225.000.
Sato, Masaaki; and Kobayashi, Minoru, 4,227,222, Cl. 360-60.000.

Omori, Norio: *See*—
Kobayashi, Akio; Endo, Kunio; and Omori, Norio, 4,226,215, Cl. 123-487.000.

Omura, Satoshi; Kitao, Chiaki; Nakagawa, Akira; Tanaka, Haruo; Awaya, Juichi; and Oiwa, Ruiko, to Kyowa Hakko Kogyo Kabushiki Kaisha; and Kitasato Institute, The. Antibiotic composition. 4,226,879, Cl. 424-278.000.

Onda, Yoshiro; Muto, Hiroaki; and Maruyama, Kazumasa, to Shin-Etsu Chemical Co., Ltd. Ether-ester derivatives of cellulose and their applications. 4,226,981, Cl. 536-66.000.

O'Neill, Eoin P.; and Keairns, Dale L., to United States of America, U.S. Environmental Protection Agency. Activation of calcium oxide as a sorbent. 4,226,839, Cl. 423-177.000.

Onisko, Bruce L.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L., Jr.; and Onisko, Bruce L., 4,226,787, Cl. 260-397.200.

Ono, Makoto: *See*—
Nakayama, Shozo; Hattori, Mitsuhiro; and Ono, Makoto, 4,226,572, Cl. 417-269.000.

Ono Pharmaceutical Co., Ltd.: *See*—
Iizuka, Kinji; Akahane, Kenji; Momose, Denichi; Kamijo, Yukio; and Ajisawa, Yukiyoshi, 4,226,878, Cl. 424-273.00R.

Oosten, Hendrik v.; and Verbeek, Willem J. P. A., to N.V. Optische Industrie "De Oude Delft". Film projection system. 4,226,512, Cl. 352-115.000.

Oppelt, Manfred: *See*—
Geissler, Hans-Juergen; Mueller, Peter; Oppelt, Manfred; Schoener, Horst; and Stuetzer, Franz A., 4,226,178, Cl. 99-447.000.

Orban, Ferenc: *See*—
Boros, Jozsef; Csillag, Zsolt; Ferenczi, Tibor; Kalman, Tibor; Lengyel, Laszlo; Matyasi, Jozsef; Orban, Ferenc; Solymar, Karoly; Toth, Bela; Toth, Lajos; Voros, Istan; Wentzely, Kalman; Zambo, Janos; and Zoldi, Jozsef, 4,226,838, Cl. 423-121.000.

Orlov, Gennady I.: *See*—
Frolov, Jury F.; Piljukov, Jury F.; Cherednichenko, Vladimir S.; Orlov, Gennady I.; Kurapin, Igor N.; Shabaiina, Roza I.; Lakernik, Mark M.; Gavrilenko, Alexandr F.; Yakovenko, Anatoly A.; Elkina, Alla K.; Golovachev, Anatoly I.; Egorova, Tatyana S.; Vlasov, Jury M.; Smelyansky, Matvei Y., deceased; and Zelichenko, Faina S., administator, 4,226,406, Cl. 266-148.000.

Ortlinhaus-Werke GmbH: *See*—
Mombre, Karl W., 4,226,314, Cl. 192-18.00A.

Orzalesi, Henri; and Castel, Jean, to Choay S.A. Guanylhydrazones and medicaments containing them. 4,226,885, Cl. 424-303.000.

Oseas, Jonathan: *See*—
Ehrsam, William F.; Elander, Robert C.; Hollis, Lloyd L.; Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Oseas, Jonathan; and Tuchman, Walter L., 4,227,253, Cl. 375-2.000.

Osterwold, Heinz W. H., to National Institute for Metallurgy. Arc furnace electrode slip monitoring device. 4,227,030, Cl. 13-14.000.

Ostling, Sture; and Persson, Stig, to Aktiebolaget SKF. Pressure oil injector. 4,226,571, Cl. 417-63.000.

Osugi, Kozo, to Furukawa Metals Co., Ltd. Automatic molten metal surface level control system for continuous casting machines. 4,226,278, Cl. 164-449.000.

Ota, Yusuke: *See*—
Goodwin, Charles A.; and Ota, Yusuke, 4,226,648, Cl. 148-175.000.

Otsuka Kagaku Yakuhin Kabushiki Kaisha: *See*—
Tsurushige, Normitsu; Takao, Toshinori; and Yamada, Shinichi, 4,226,943, Cl. 521-73.000.

Ottertun, Harald D.: *See*—
Reinhardt, Hans; and Ottertun, Harald D., 4,226,791, Cl. 260-429.00R.

Ottow, Alexander B., to Internationale Octrooi Maatschappij. Packaging container. 4,226,358, Cl. 229-44.00R.

Ouchi, Hiromu: *See*—
Nishida, Masamitsu; Kawashima, Syunichiro; Ueda, Ichiro; and Ouchi, Hiromu, 4,226,827, Cl. 264-332.000.

Outboard Marine Corporation: *See*—
Cavil, David T.; and McAuliffe, Gerald N., 4,227,132, Cl. 318-549.000.

Ovshinsky, Herbert C.; and Marshall, Gerald F., to Energy Conversion Devices, Inc. Imaging device. 4,226,523, Cl. 355-1.000.

Ovshinsky, Stanford R.; and Madan, Arun, to Energy Conversion Devices, Inc. Amorphous semiconductors equivalent to crystalline semiconductors produced by a glow discharge process. 4,226,898, Cl. 427-39.000.

Owens-Corning Fiberglas Corporation: *See*—
McCort, Ralph E., 4,226,662, Cl. 156-390.000.

Oyama, Shiro: *See—*
Takahashi, Yuzo; Maeda, Yoshinari; Tanaka, Yasuyuki; Nagai, Kastumi; and Oyama, Shiro, 4,226,201, Cl. 113-12.000.

Ozaki, Masaru: *See—*
Kimura, Muneaki; Arakawa, Tatsumi; Ozaki, Masaru; and Kobayashi, Hidehiko, 4,226,924, Cl. 429-126.000.

Ozaki, Nobuo, to Maeda Industries, Ltd. Bicycle free wheel hub with coaster brake. 4,226,310, Cl. 192-6.00R.

Pacey, Keith: *See—*
Gurwicz, David; and Pacey, Keith, 4,227,243, Cl. 363-132.000.

Pacini, Ermanno. Machine for sawing blocks of solid, especially stony materials, such as marble, granite and the like. 4,226,223, Cl. 125-16.00R.

Packman, Elias W.; and Jeffkin, Ruth. Antihistamine containing antiperspirant compositions and methods for use thereof. 4,226,850, Cl. 424-47.000.

Painter, Howard S., to GTE Products Corporation. Photoflash lamp with knurled foil strip. 4,226,583, Cl. 431-362.000.

Palazzetti, Mario, to Fiat Auto S.p.A. Apparatus for the combined production of electrical energy and heat. 4,226,214, Cl. 123-2.000.

Palladino, Gaetano: *See—*
Riva, Mario; Palladino, Gaetano; and Toscano, Lucian, 4,226,862, Cl. 424-243.000.

Pallaver, Carl B.: *See—*
Mazur, Peter O.; and Pallaver, Carl B., 4,226,169, Cl. 92-206.000.

Palle, Robert J.; Smith, Sidney R.; Rockwell, Kenton D.; and Napierski, Charles F., to Texscan Corporation. Cable system subscriber tap with rotating center conductor seizure apparatus and spiral contact and method for using same. 4,226,495, Cl. 339-122.00R.

Panayotov, Stoyan Y.: *See—*
Antonov, Bogomil T.; Panayotov, Stoyan Y.; and Lyutakov, Ognyan V., 4,226,697, Cl. 204-298.000.

Panepinto, Louis, to AMF Incorporated. Hand exerciser. 4,226,412, Cl. 272-68.000.

Papanu, Victor D.: *See—*
Dyroff, David R.; and Papanu, Victor D., 4,226,959, Cl. 525-401.000.
Dyroff, David R.; and Papanu, Victor D., 4,226,960, Cl. 525-401.000.

Paptzun, George J. Flexible seal and groove assembly. 4,226,428, Cl. 277-94.000.

Paque, Michael W.: *See—*
Bradshaw, Franklin C.; Connoy, Thomas P.; and Paque, Michael W., 4,226,547, Cl. 400-613.000.

Paquet, Denis; Thou, Kaing S.; and Alais, Charles, to Agence Nationale de Valorisation de la Recherche (ANVAR). Process for the production of foam products similar to egg white from milk serum. 4,226,893, Cl. 426-564.000.

Paradi, Laszlo; Acs, Miklos; Szucs, Tibor; and Konkoly, Tibor, to Finommechanikai Vallalat. Method of joining current conducting components of wave guide elements and producing of the same. 4,227,065, Cl. 219-121.0EM.

Park, Chung P.; and Bouton, Richard A., to Dow Chemical Company, The. Polyethylene blend foams having improved compressive strength. 4,226,946, Cl. 521-98.000.

Parker-Hannifin Corporation: *See—*
Jelinek, Jerry G.; and Bain, Orville J., 4,226,431, Cl. 277-165.000.

Pasqualucci, Carmine: *See—*
Marsili, Leonardo; Rossetti, Vittorio; and Pasqualucci, Carmine, 4,226,765, Cl. 260-239.30P.

Patchornik, Abraham: *See—*
Haviv, Fortuna; and Patchornik, Abraham, 4,226,806, Cl. 260-507.00R.

Patel, Raman P.: *See—*
Coran, Aubert Y.; and Patel, Raman P., 4,226,953, Cl. 525-193.000.

Patentes FAC, S.A.: *See—*
Garcia, Francisco E., 4,226,099, Cl. 70-41.000.

Paterson, Malcolm M.; Grubbs, Michael R.; Coulombe, Eugene J.; and Paxson, William J., to Raytheon Company. Collector discharge apparatus. 4,226,704, Cl. 209-138.000.

Paton, Boris E.; Latash, Jury V.; Grigorenko, Georgy M.; Lisovoi, Jury V.; Stepanenko, Viktor V.; and Asoiants, Grigory B. Nonconsumable electrode for melting metals and alloys. 4,227,031, Cl. 13-18.00A.

Paul, Gunther: *See—*
Bieber, Theo; Schuster, Friedrich; Paul, Gunther; Schmitt, Gunther; and Schmucker, Wolfgang, 4,226,080, Cl. 57-339.000.

Paulsen, Rex E.; and Moser, Harold, to SDI Welding Corporation. Ski lift apparatus and safety device. 4,226,187, Cl. 104-182.000.

Pauly, Peter D.: *See—*
Stone, Herman; and Pauly, Peter D., 4,226,944, Cl. 521-76.000.

Pavone, Robert J.: *See—*
Logan, David J.; and Pavone, Robert J., 4,226,148, Cl. 83-71.000.

Paxson, William J.: *See—*
Paterson, Malcolm M.; Grubbs, Michael R.; Coulombe, Eugene J.; and Paxson, William J., 4,226,704, Cl. 209-138.000.

Payne, Rex E., Jr.: *See—*
Hoffman, Ronald R.; Payne, Rex E., Jr.; and Saint, David, 4,226,452, Cl. 292-175.000.

Payne, Rodney D.: *See—*
Ferguson, Frederick A.; and Payne, Rodney D., 4,226,670, Cl. 159-16.00R.

Payne, Thomas R.; and Hurko, Bohdan, to General Electric Company. Optimum time ratio control system for microwave oven including food surface browning capability. 4,227,062, Cl. 219-10.55B.

Pazonyi, Tamas: *See—*
Dimitrov, Miklos; Keleman nee Gulyas, Franciska K.; Marko, Richard; Pazonyi, Tamas; Pukanszky, Bela; and Riczko, Andras, 4,226,750, Cl. 260-23.00H.

Pear, Arthur W.: *See—*
Euler, John W.; and Pear, Arthur W., 4,226,319, Cl. 192-85.0CA.

Peck, William P., to United States of America, Navy. Sealed-volume cartridge. 4,226,186, Cl. 102-38.0PP.

Peev, Vassil: *See—*
Genev, Ivan V.; Konstantinov, Mihail; Valchev, Alexander; and Peev, Vassil, 4,226,207, Cl. 118-620.000.

Pelletier, Charles A.; and Barefoot, Edgar D., to Electric Power Research Institute, Inc. Leak detecting arrangement especially suitable for a steam condenser and method. 4,226,113, Cl. 73-40.700.

Pellman, Arnold: *See—*
Dreyfus, Marc G.; and Pellman, Arnold, 4,226,536, Cl. 356-376.000.

Pelosi, Lorenzo F., to Du Pont de Nemours, E. I., and Company. Reactive fluid adhesive compositions. 4,226,954, Cl. 525-259.000.

Pelton, Ronald L.: *See—*
Coffaro, Matthew; and Pelton, Ronald L., 4,226,414, Cl. 272-117.000.

Pennwalt Corporation: *See—*
Popoff, Ivan C.; and Sandler, Stanley R., 4,226,948, Cl. 521-167.000.

Percarpio, Edward P., to Becton, Dickinson and Company. Cannula pierceable self-sealing closure. 4,226,333, Cl. 215-247.000.

Perino, Didier: *See—*
Dreyfus, Gerard; Lewiner, Jacques; and Perino, Didier, 4,227,086, Cl. 250-389.000.

Peris, John M., to Hardinge Brothers, Inc. Machine tool guard door assembly. 4,226,322, Cl. 192-135.000.

Perkin-Elmer Corporation, The: *See—*
Fuschetto, Anthony N., 4,226,507, Cl. 350-295.000.
Shafer, David R., 4,226,501, Cl. 350-55.000.

Perry, Fred G., to General Electric Company. Arrangement for control of remote equipment. 4,227,179, Cl. 340-147.0LP.

Persson, Hans B. F. Door jamb. 4,226,066, Cl. 52-211.000.

Persson, Stig: *See—*
Ostling, Sture; and Persson, Stig, 4,226,571, Cl. 417-63.000.

Pervushin, Evgeny S.: *See—*
Berber, Viktor A.; Pervushin, Evgeny S.; Murtazin, Khafiz M.; and Kholin, Vladimir G., 4,226,532, Cl. 356-336.000.

Peter, Richard; Kirner, Hans D.; and Gehrlein, Rolf, to Rohner AG Pratteln. Process for printing unions. 4,226,596, Cl. 8-532.000.

Peters Machinery Company, Subsidiary of Katy Industries, Inc.: *See—*
Rose, Edward; and Roth, Robert A., 4,226,073, Cl. 53-532.000.

Petersen, Carl E. T.: *See—*
Lund, Svend A.; Iversen, Sven E.; Petersen, Carl E. T.; Bogen, Erik T.; and Dam, Jorgen, 4,226,122, Cl. 73-609.000.

Petersen, Christian C. Intrusion alarm control system. 4,227,188, Cl. 340-566.000.

Peterson, Dean, to Beatrice Foods Co. Insect killing apparatus. 4,226,043, Cl. 43-112.000.

Peterson Labs., Inc.: *See—*
Ehrenpreis, Seymour; and Freedman, Barry, 4,226,250, Cl. 131-187.000.

Peterson, Otis G.: *See—*
Barrett, Joseph J.; and Peterson, Otis G., 4,227,159, Cl. 331-94.50P.

Petri, Norbert: *See—*
Grosskinsky, Otto-Alfred; Petri, Norbert; Hein, Johannes; and Leitner, Hans, 4,227,021, Cl. 562-513.000.

Petrolite Corporation: *See—*
Cheng, William J.; and Guthrie, David B., 4,226,739, Cl. 252-389.00R.
Martin, Robert B., 4,226,690, Cl. 204-190.000.
Mayse, Weldon D.; and Watson, Frederick D., 4,226,689, Cl. 204-188.000.

Petry, Kurt, to Pfaff Industriemaschinen GmbH. Device for the contour sewing of workpieces. 4,226,198, Cl. 112-121.120.

Pfaff Industriemaschinen GmbH: *See—*
Petry, Kurt, 4,226,198, Cl. 112-121.120.

Pfaff, Werner: *See—*
Oeding, Volker; Pfaff, Werner; Vertesy, Laszlo; and Weidenmuller, Hans-Ludwig, 4,226,764, Cl. 260-112.00R.

Pfeifer, William: *See—*
Marshall, Winston S.; and Pfeifer, William, 4,226,887, Cl. 424-356.000.

Pfeiffer, Douglas R.: *See—*
Babcock, Donner F.; Deber, Charles M.; Debono, Manuel; Molloy, R. Michael; and Pfeiffer, Douglas R., 4,227,002, Cl. 548-216.000.

Pfeiffer, Hansjorg, to Sulzer Brothers Ltd. Method of manufacturing xylose solution from xylan-containing raw material. 4,226,638, Cl. 127-37.000.

Pfirrmann, Rolf W.; and Wicki, Otto, to Ed. Geistlich Sohne A.G. fur Chemische Industrie. Method and composition for the treatment of scars. 4,226,858, Cl. 424-195.000.

Pfister, Frieder K. H.: *See—*
Barten, Hans M.; and Pfister, Frieder K. H., 4,226,540, Cl. 356-445.000.

Pfister GmbH: *See—*
Barten, Hans M.; and Pfister, Frieder K. H., 4,226,540, Cl. 356-445.000.

Pfisterer, Noelie B.: *See—*
Cary, George R.; and Pfisterer, Noelie B., 4,225,988, Cl. 5-61.000.

Pfizer Inc.: *See—*
Schnur, Rodney C., 4,226,875, Cl. 424-272.000.

Pfleger, Frederick W. Ampule breaker. 4,226,376, Cl. 241-99.000.
Phillips Petroleum Company: *See—*
Christensen, Don C., 4,226,671, Cl. 159-47.00R.
Gay, John W., 4,226,380, Cl. 242-55.000.
Montgomery, Dean P., 4,227,025, Cl. 585-259.000.
Shioyama, Tod K., 4,226,809, Cl. 260-583.00P.
Vinatieri, James E., 4,226,702, Cl. 208-188.000.
Wegner, Eugene H., 4,226,939, Cl. 435-247.000.
Picciochi, Andrew V. Unitary pick having multiple picking surfaces. 4,226,160, Cl. 84-322.000.
Pichette, Carold. Attaching device for soffits. 4,226,059, Cl. 52-94.000.
Picklesimer, Lewellyn G., to United States of America, Air Force. Synthesis of acetylene-terminated compounds. 4,226,800, Cl. 260-465.00F.
Piecuch, Rudolph F.: *See—*
Kupcak, Kenneth S.; and Piecuch, Rudolph F., 4,226,550, Cl. 403-157.000.
Pierrel S.p.A.: *See—*
Riva, Mario; Palladino, Gaetano; and Toscano, Lucian, 4,226,862, Cl. 424-243.000.
Pierson, Joseph E.: *See—*
Bartholomew, Roger F.; Dorfeld, William G.; Murphy, James A.; Pierson, Joseph E.; Stookey, Stanley D.; and Tick, Paul A., 4,226,628, Cl. 106-47.00R.
Pieters, Wim J. M.; Gates, William E.; and Wenger, Franz, to Allied Chemical Corporation. Process for producing chlorotrifluoroethylene. 4,226,812, Cl. 570-157.000.
Pigeon, Marcel: *See—*
Neill, Ronald; and Pigeon, Marcel, 4,226,931, Cl. 430-302.000.
Piguet, Christian, to Centre Electronique Horloger, S.A. Logic D flip-flop structure. 4,227,097, Cl. 307-279.000.
Pihert, Dobromil: *See—*
Beranek, Jaroslav; Pihert, Dobromil; and Engel, Oleg, 4,226,835, Cl. 422-310.000.
Pilgram, Kurt H., to Shell Oil Company. Certain herbicidal (2-oxo-3-oxazolidinyl)phenylureas. 4,226,612, Cl. 71-88.000.
Pilgrim Engineering Developments Limited: *See—*
Bunyan, Thomas W., 4,226,444, Cl. 285-21.000.
Piljukov, Jury F.: *See—*
Frolov, Jury F.; Piljukov, Jury F.; Cherednichenko, Vladimir S.; Orlov, Gennady I.; Kurapin, Igor N.; Shabalina, Roza I.; Lakernik, Mark M.; Gavrilenko, Alexandr F.; Yakovenko, Anatoly A.; Elkina, Alla K.; Golovachev, Anatoly I.; Egorova, Tatyana S.; Vlasov, Jury M.; Smelyansky, Matvei Y., deceased; and Zelichenko, Faina S., administator, 4,226,406, Cl. 266-148.000.
Pioneer Electronic Corporation: *See—*
Isobe, Teruhiko, 4,227,213, Cl. 358-128.500.
Magata, Yoshihiro; Yoshida, Kobun; and Kato, Itsuo, 4,227,223, Cl. 360-73.000.
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Pirovano, Dante; and Migliarini, Cesare, to Industrie Pirelli, S.p.A. Apparatus for associating a bead filler with a bead core of a vehicle tire. 4,226,663, Cl. 156-422.000.
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Coleman, John H., 4,226,897, Cl. 427-39.000.
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Reh, Lothar; Plass, Ludolf; Marchessaux, Philippe; and Sood, Raman, 4,226,844, Cl. 423-625.000.
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Plessers, Hendrik S.; and Hellemans, Julianus J., to AGFA-GEVAERT N.V. Apparatus for opening radiographic cassettes. 4,227,089, Cl. 250-468.000.
Pliley, Larry E. Vise with watch component engaging jaw accessories. 4,226,144, Cl. 81-6.000.
Plummer, William B.: *See—*
Holecek, Joseph J.; Plummer, William B.; Schwieters, Clarence R.; and Zell, Michael N., 4,226,570, Cl. 414-751.000.
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Gervais, Theodore; and McCole, Thomas P., 4,226,519, Cl. 354-174.000.
Haas, Howard C.; and Moreau, Robert D., 4,227,013, Cl. 560-190.000.
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Svatek, Thomas A., 4,226,510, Cl. 352-31.000.
Wright, Joseph H., 4,226,511, Cl. 352-72.000.
Polk, Todd J.; and McGowan, Francis E., to KLI, Inc. Surgical ligating instrument and method. 4,226,239, Cl. 128-303.00A.
Pollinger, Hans; and Lohmeier, Paul, to Knorr-Bremse GmbH. Spring-loaded brake device for railway vehicles. 4,226,481, Cl. 303-82.000.
Pollmeier, Konrad; and Thesing, Wilhelm, to Durkoppwerke GmbH. Sewing machine with edge guide. 4,226,197, Cl. 112-121.110.
Polonsky, Samuel; and Pomponio, Edward V., to General Electric Company. Battery terminal harness having improved fastening means for preventing application of reverse polarity voltage. 4,226,497, Cl. 339-184.00M.
Polyakov, Arkady V.: *See—*
Grigoriev, Vasily A.; Arkhipova, Zinaida V.; Balaev, Gurgen A.; Bakajutov, Nikolai G.; Vysotskaya, Vera I.; Polyakov, Arkady V.; and Zapletnyak, Vitaly M., 4,226,965, Cl. 526-116.000.
Pomponio, Edward V.: *See—*
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Johnson, Carl B., 4,226,468, Cl. 297-84.000.
Johnson, Carl B., 4,226,473, Cl. 297-316.000.
Popescu, Francine. Brighteners for electrolytic acid zinc baths. 4,226,682, Cl. 204-55.00R.
Popoff, Ivan C.; and Sandler, Stanley R., to Pennwalt Corporation. 2-Trichloromethyloxazolidine and thiazolidine derivatives useful as flame retardants for polyurethane foam. 4,226,948, Cl. 521-167.000.
Popov, Jury S.: *See—*
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Popper, Jakhin B., to Popper Engineering Ltd. Vibrating surface apparatus. 4,226,709, Cl. 209-315.000.
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Port-A-Crib, Inc.: *See—*
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Portal, Charles; and Cook, Glenn M., to Kennecott Copper Corporation. Electrolytic treatment of plating wastes. 4,226,685, Cl. 204-105.00R.
Porter, Troy L.; and Belansky, Rudolph J., to Illinois Tool Works Inc. Gear drive assembly. 4,226,136, Cl. 74-416.000.
Potts, James E., to Union Carbide Corporation. Orthopedic devices, materials and methods. 4,226,230, Cl. 128-90.000.
Powell, James R.: *See—*
Botts, Thomas E.; and Powell, James R., 4,226,369, Cl. 241-1.000.
Prakash, Nellikunja J.: *See—*
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Pratt, Harry H.: *See—*
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Prebensen, Soren P., to Atlas Copco Aktiebolag. Rock bolting apparatus. 4,226,559, Cl. 405-303.000.
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Priefert, Marvin J., to Priefert Mfg. Co. Animal holding gate with automatic closing operation. 4,226,212, Cl. 119-98.000.
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Marcus, Konrad H., 4,227,241, Cl. 362-61.000.
Marcus, Konrad H., 4,227,242, Cl. 362-61.000.
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Howard, Norman B., 4,226,890, Cl. 426-92.000.
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Proshkina, Alexandra V.: *See—*
Varlamov, Gennady D.; Bekbulatov, Ildgam A.; Madaliev, Shavkat; Mamatov, Juldash; Proshkina, Alexandra V.; and Ubiennykh, Svetlana N., 4,226,968, Cl. 528-91.000.
Prugh, John D.: *See—*
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Pruvot, Francois C., to F. Jos. Lamb Company. Bearing assembly with thermal adaptor. 4,226,485, Cl. 308-207.00R.
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Pukanszky, Bela: *See—*
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Pullman Incorporated: *See—*
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Snyder, Richard C., 4,226,188, Cl. 105-199.0CB.
Purchas, Derek B., to National Research Development Corporation. Filtration apparatus. 4,226,723, Cl. 210-332.000.
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Quadracast Systems, Inc.: *See—*
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Quenot, Michel C.; and Scandella, Louis, to Stanley Mabo S.A. Knife and blade advance and locking mechanism therefor. 4,226,020, Cl. 30-162.000.

Quinn, William T., III. Subject identification system with overlie cover. 4,226,030, Cl. 35-28.000.
Quinonez, Manuel: *See—*
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R & D Associates: *See—*
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Carroll, Michael A.; and Carroll, John L., 4,226,040, Cl. 40-610.000.
Raber, Samuel. Light emitting smoke detector. 4,227,191, Cl. 340-628.000.
Radocy, Robert; and Dick, Ronald E. Prosthetic terminal device. 4,225,983, Cl. 3-12.000.
Rallis, Rallie P.; Cullity, Richard E.; and Tamplin, Lyle R., to Mark Industries. Self propelled and extensible boom lift. 4,226,300, Cl. 182-2.000.
Ramos Martinez, Wilson. Metallic cardiac valve prosthesis. 4,225,980, Cl. 3-1.500.
Ramusino, Francesco C., to Innocento Santeustacchio S.p.A. Milling machine for use in restricted recesses. 4,226,561, Cl. 409-232.000.
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Ransom, Ralph D.: *See—*
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Rardin, Jack A.; and Rardin, Byron C. Snap-in locking device for electrical wiring device boxes. 4,226,393, Cl. 248-205.00R.
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Rauhut, Michael M.; Tseng, Shin-Shyong; and Mohan, Arthur G., to American Cyanamid Company. N,N-Bis(trifluoromethylsulfonyl)oxamides and chemiluminescent compositions containing the same. 4,226,738, Cl. 252-188.3CL.
Ray, Charles A.: *See—*
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Paterson, Malcolm M.; Grubbs, Michael R.; Coulombe, Eugene J.; and Paxson, William J., 4,226,704, Cl. 209-138.000.
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Aschwanden, Felix, 4,227,186, Cl. 340-347.0CC.
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Bohringer, Walter, 4,227,125, Cl. 315-411.000.
Carlson, David E., 4,226,643, Cl. 136-89.0TF.
Dietz, Wolfgang F. W., 4,227,123, Cl. 315-397.000.
Gurley, Thomas M.; Hopkins, Robert S., Jr.; and Fischer, Wolf-Dieter, 4,227,215, Cl. 358-160.000.
Olmstead, John A., 4,226,219, Cl. 123-424.000.
Redaelli, Vincenzo; De Simone, Renato; and Platone, Edoardo, to Anic, S.p.A. Splitting up pyran rings. 4,226,810, Cl. 568-386.000.
Reed, Charles F., to Avery International Corporation. Deflectable bearer roll. 4,226,150, Cl. 83-346.000.
Reed, William R., Jr.: *See—*
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Reh, Lothar; Plass, Ludolf; Marchessaux, Philippe; and Sood, Raman, to Aluminum Pechiney. Method of thermally splitting hydrate of aluminum chloride. 4,226,844, Cl. 423-625.000.
Rehm, William A., to Technical Systems Co. Desilter. 4,226,726, Cl. 210-512.00M.
Reid, Alister U. Hydraulically-operated machines. 4,226,573, Cl. 417-329.000.
Reinbold, Richard J., to Bethlehem Steel Corporation. Metallurgical lance deskuller. 4,226,407, Cl. 266-226.000.
Reinhard, Russell R.; and Yaffe, Roberta, to Texaco Inc. Synthetic aircraft turbine oil. 4,226,732, Cl. 252-32.500.
Reinhardt, Hans; and Ottertun, Harald D., to Berol Kemi AB. Method and a reagent mixture for removing metal ions from an aqueous solution by means of liquid-liquid extraction. 4,226,791, Cl. 260-429.00R.
Reith, Kuno W., to Steam Stores, Inc. Parts cleaning apparatus. 4,226,548, Cl. 401-188.00R.
Rembold, Helmut; and Linder, Ernst, to Robert Bosch GmbH. Automatic transmission utilizing a slider for pressure distribution to servo-elements controlling the gear ratio. 4,226,142, Cl. 74-867.000.
Rembold, Helmut; Linder, Ernst; and Grob, Ferdinand, to Robert Bosch GmbH. Gear shift system and method with optional gas pedal controlled shaft initiation. 4,226,295, Cl. 180-335.000.
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Anfilov, Igor V.; Abramov, Jury V.; Ershov, Geny S.; Bogomolov, Valentin G.; Kaidoshko, Eduard A.; Remizov, Jury B.; Rozhenko, Anatoly L.; and Suvorov, Gennady P., 4,226,514, Cl. 354-7.000.
Renaut, Henry, to Societe Anonyme dite: Anciens Ets P. Lemaire & Cie. Method for the heat-transfer printing of a textile material. 4,226,594, Cl. 8-471.000.
Republic Steel Corp.: *See—*
Waid, George M.; and Ault, Robert T., 4,226,645, Cl. 148-2.000.
RescueTech Corporation: *See—*
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Rey, Pierre; Leandri, Jacqueline; and Abbou, Clement. Total or partial ureteral prosthesis. 4,225,979, Cl. 3-1.000.
Rice, William H., to Blavat Advertizing, Inc. Tool kit and protective cushion. 4,226,347, Cl. 224-35.000.
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Roberts, Fredrick D.: *See—*
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Roberts, Peter T.: *See—*
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Robertsson, Hans R., to Saab-Scania AB. Transmission of information by sweeping fan-shaped beams. 4,227,261, Cl. 455-600.000.
Robins, Robert R. Tire bead breaking apparatus. 4,226,275, Cl. 157-1.200.
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Robson, David P. NDB Instrument flight trainer. 4,226,028, Cl. 35-10.260.
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Eshghy, Siavash, 4,226,015, Cl. 29-407.000.
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Rodriguez, Robert. Wall display device. 4,226,037, Cl. 40-152.100.
Roesel, John F., Jr., to Precise Power Corporation. Variable speed A.C. motor. 4,227,136, Cl. 318-701.000.
Rogers, Norman H.; and O'Hanlon, Peter J., to Beecham Group Limited. Antibacterial compounds. 4,226,880, Cl. 424-283.000.
Rogers, Walter C., Jr.; and Hoffman, David S., to Royal Development Company, Inc. Recliner chair with wall-avoiding action. 4,226,469, Cl. 297-85.000.
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Rommel, Heinz, to Artos Dr.-Ing Meier Windhorst KG. Device for applying liquids onto a continuously-running web. 4,226,097, Cl. 68-205.00R.
Roncari, Gaetano, to Hoffmann-La Roche Inc. Immunological diagnostic reagents comprising thio-amine terminated latex particles. 4,226,747, Cl. 260-8.000.
Roodt, Guy S. R. Mechanical safety device for a winch. 4,226,405, Cl. 254-335.000.
Root, James A.; and Baker, Arleigh B., to SCOPE Incorporated. Housing for a hand held transmitter-receiver. 4,227,258, Cl. 455-348.000.
Rose, David; Lieske, Edgar; and Busch, Peter, to Henkel Kommanditgesellschaft auf Aktien. Oxidation hair-coloring preparation based upon N,N-bis-(β-hydroxyethyl)-m-phenylenediamines. 4,226,595, Cl. 8-406.000.
Rose, Edward; and Roth, Robert A., to Peters Machinery Company, Subsidiary of Katy Industries, Inc. Tray loader. 4,226,073, Cl. 53-532.000.
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Rozenfeld, Lev M.; Popov, Jury S.; and Korolkov, Anatoly G. Electrical machine with cryogenic cooling. 4,227,102, Cl. 310-52.000.
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Rubi, Horst, to Blaupunkt-Werke GmbH. Tape recording/reproducing transport system, particularly for longitudinal video tape recording. 4,226,386, Cl. 242-192.000.
Ruchel, Peter, to Diehl GmbH & Co. Brass material and a process for the preparation thereof. 4,226,621, Cl. 75-157.500.
Runnels, Robert W.; and Wagenaar, Loren B., to Westinghouse Electric Corp. Modular condenser bushing. 4,227,035, Cl. 174-15.0BH.
Rupert, Dorothy G.; and Stobberingh, Frieda A., to Rupert, Dorothy Gloria. Safety vest. 4,226,474, Cl. 297-484.000.
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Deming, Charles P.; Rybarczyk, Norbert J., Jr.; and Burkall, Alvin E., 4,226,026, Cl. 34-31.000.
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Long, Barry W.; and Rye, Grover W., 4,226,273, Cl. 152-326.000.
S R I International: *See—*
Laine, Richard M., 4,226,845, Cl. 423-655.000.
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Robertsson, Hans R., 4,227,261, Cl. 455-600.000.
Sadacca, Albert V.: *See—*
Cheng, Paul S. Y., 4,227,228, Cl. 361-104.000.
Safiuddin, Mohammed; and Dickerson, Henry A., to Westinghouse Electric Corp. Torque compensation system. 4,227,130, Cl. 318-338.000.
Sailor, Robert A.: *See—*
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Saint, David: *See—*
Hoffman, Ronald R.; Payne, Rex E., Jr.; and Saint, David, 4,226,452, Cl. 292-175.000.
Saint-Gobain Industries: *See—*
Auger, Robert H., 4,226,506, Cl. 350-292.000.
Chenel, Pierre, 4,226,063, Cl. 52-172.000.
St. John, Richard C., to Aspro, Inc. Centrifugal clutch construction. 4,226,320, Cl. 192-105.0CD.
Saito, Akira; Miura, Yushichi; and Bando, Koichiro, to Nippon Kokan Kabushiki Kaisha. Earthquake-proof foundation structure for horizontal type coke oven battery. 4,226,677, Cl. 202-138.000.
Saito, Akira: *See—*
Shiraishi, Makoto; Uchida, Hiroshi; Koizumi, Yoshinori; and Saito, Akira, 4,226,966, Cl. 526-202.000.
Saito, Eisuke: *See—*
Sasaki, Takashi; Hagiwara, Miyuki; Araki, Kunio; Ishitani, Hayao; Saito, Eisuke; and Komatsu, Kyozi, 4,226,687, Cl. 204-159.130.
Saito, Masashi, to Nippon Gakki Seizo Kabushiki Kaisha. Mounting and electrical connection means for operation unit for electric devices. 4,227,238, Cl. 361-415.000.
Saito, Minoru: *See—*
Ogasa, Katsuhiro; Kuboyama, Morio; Saito, Minoru; Kudo, Tsutomu; Harada, Yoshitsugu; Kawashiri, Akio; and Takahashi, Eiji, 4,226,847, Cl. 424-12.000.
Saito, Nakaji. Apparatus for continuously dredging submarine mineral deposit. 4,226,035, Cl. 37-69.000.
Saito, Shin: *See—*
Takimoto, Yasuyuki; Tanabe, Kunsei; Saito, Shin; Nishimura, Masakatsu; and Umeda, Yasushi, 4,226,930, Cl. 430-126.000.
Saito, Syobu: *See—*
Okura, Akimitsu; Saito, Syobu; and Ukiana, Motohide, 4,227,080, Cl. 250-311.000.
Sakabe, Yukio, to Murata Manufacturing Co., Ltd. Dielectric ceramic composition and process for its production containing $MgTiO_3$ and Pb_3O_4 having a quantitative relationship. 4,226,735, Cl. 252-63.200.
Sakai, Riyouji: *See—*
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Sakaki, Hiroshi: *See—*
Tamori, Michitoshi; Furuya, Katsuhiko; Yanagidaira, Hidetaka; and Sakaki, Hiroshi, 4,227,160, Cl. 333-18.000.
Sakamoto, Koji; Miyakawa, Seiichi; and Tatsumi, Susumu, to Ricoh Company, Ltd. Electrostatic copying machine. 4,226,525, Cl. 355-14.00D.
Saklad, Eugene L., to New England Nuclear Corporation. Albumin microaggregates for radioactive scanning of reticuloendothelial systems. 4,226,846, Cl. 424-1.000.
Salama, Mamdouh: *See—*
Bourne, Henry A., Jr.; and Salama, Mamdouh, 4,226,555, Cl. 405-224.000.
Salerno, James; Liss, Fabian T.; and Weiss, Frank, to United States of America, Army. Fuze. 4,227,195, Cl. 343-17.10R.
Salice, Luciano, to Arturo Salice S.p.A. Pivotal joint with position-stabilizing spring. 4,226,001, Cl. 16-145.000.
Sammells, Anthony F., to Institute of Gas Technology. Sodium sulfur electrochemical cell or battery. 4,226,922, Cl. 429-104.000.
Sandler, Stanley R.: *See—*
Popoff, Ivan C.; and Sandler, Stanley R., 4,226,948, Cl. 521-167.000.
Sandor, Steven D. Apparatus for making hot beverages. 4,226,175, Cl. 99-286.000.

Sanyo Electric Co., Ltd.: *See*—
Ikeda, Hironosuke; and Narukawa, Satoshi, 4,226,925, Cl. 429-161.000.
Sarnoff, Stanley J.; Calkins, George B.; and Dalling, N. Lawrence, to Survival Technology, Inc. Plural injecting device. 4,226,235, Cl. 128-218.00F.
Sasaki, Takashi; Hagiwara, Miyuki; Araki, Kunio; Ishitani, Hayao; Saito, Eisuke; and Komatsu, Kyozi, to Furukawa Electric Co., Ltd., The; and Japan Atomic Energy Research Institute. Method of preventing fine cracks from occuring in rubber or plastic insulation of an insulated wire or cable exposed to electron beam irradiation. 4,226,687, Cl. 204-159.130.
Saskatchewan Power Corporation: *See*—
Mitchell, James, 4,227,038, Cl. 174-42.000.
Sato, Hideo; and Kobayashi, Osamu, to Nissan Motor Company, Limited. Fluid seal for use in rotary regenerator. 4,226,429, Cl. 277-96.200.
Sato, Isao: *See*—
Tsukahara, Satoshi; Sato, Isao; Uchiyama, Yoshihiro; and Kusaba, Masanobu, 4,226,088, Cl. 60-752.000.
Sato, Kunihiko: *See*—
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Sato, Masaaki; and Kobayashi, Minoru, to Olympus Optical Company Limited. Hand-operated tape recorder for dictation. 4,227,222, Cl. 360-60.000.
Sato, Moriyuki; Mochida, Kenichi; Yoshiie, Shigeo; and Mori, Yasuki, to Abbott Laboratories. Novel derivatives of fortimicin B and process for preparing same. 4,226,980, Cl. 536-17.00R.
Sato, Reisuke, to Pioneer Electronic Corporation. Power supply circuit for an electronic tuning type receiver with a memory element. 4,227,257, Cl. 455-343.000.
Sato, Shigeji: *See*—
Tsuji, Terutsugu; Sato, Shigeji; Fujioka, Keiji; Yamahira, Yoshiya; and Maeda, Tadao, 4,226,769, Cl. 260-239.100.
Sato, Shintaro. Floor plate for forming a foot path and method of laying a walking surface on a roof. 4,226,060, Cl. 52-99.000.
Sato, Yo, to Kabushiki Kaisha Sato. Ink supply device for label printing machine. 4,226,183, Cl. 101-295.000.
Satoh, Akira: *See*—
Hashimoto, Shigeru; Masuda, Akira; Mochizuki, Katura; Satoh, Akira; Takeuchi, Koshi; and Oda, Teruhisa, 4,226,505, Cl. 350-252.000.
Savant Instruments, Inc.: *See*—
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Sawada, Mitsuo. Apparatus for injection molding of continuous slide fastener chain. 4,226,577, Cl. 425-111.000.
Scandella, Louis: *See*—
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Scardera, Michael; and Gavin, David F., to Olin Corporation. Low-foaming alkoxy-bis(trialkoxysiloxy)-silane surfactants. 4,226,794, Cl. 556-443.000.
Schaeffer-Homberg GmbH: *See*—
Kramer, Friedhelm, 4,226,008, Cl. 24-206.00B.
Schafer, Arnold, to Schweizerische Lokomotiv-und Maschinenfabrik. Apparatus for actuating a braking unit. 4,226,306, Cl. 188-170.000.
Schechter, Paul J.: *See*—
Giroux, Eugene L.; Prakash, Nellikunja J.; and Schechter, Paul J., 4,226,882, Cl. 424-285.000.
Scheer, Gerhard: *See*—
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Schenk, Peter, to Dzus Fastener Co., Inc. Receptacle retainer. 4,226,009, Cl. 24-221.00R.
Scherba, Emil, to Scherba, Emil Stephen. Electrode coating method. 4,226,684, Cl. 204-105.00R.
Scherba, Emil Stephen: *See*—
Scherba, Emil, 4,226,684, Cl. 204-105.00R.
Schering Corporation: *See*—
Nagabhushan, Tattanahalli L., 4,226,808, Cl. 260-562.00B.
Schiffer, Gunter, to Kleinewefers GmbH. Method and apparatus for wet treatment, especially treating with lye solution and mercerizing, of knitted tubular fabric. 4,226,598, Cl. 8-125.000.
Schilling, Roger A., to Honeywell Inc. Safe start check circuit. 4,226,581, Cl. 431-26.000.
Schirmer, Ulrich; Wuerzer, Bruno; and Rohr, Wolfgang, to BASF Aktiengesellschaft. Bisthiocarbamic acid esters and herbicidal use thereof. 4,226,613, Cl. 71-100.000.
Schirmer, Ulrich; Rohr, Wolfgang; Wuerzer, Bruno; and Fett, Kurt, to BASF Aktiengesellschaft. Diurethanes. 4,227,007, Cl. 560-25.000.
Schluter, Klaus, to Krauss-Maffei AG. Mixing head, especially for reactive components such as those in thermosetting synthetic resins. 4,226,543, Cl. 366-159.000.
Schmid, Ernst: *See*—
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Schmid, Herbert; and Schmid, Ernst, to Schmid-Kosta KG. Toolholder. 4,226,562, Cl. 409-233.000.
Schmid-Kosta KG: *See*—
Schmid, Herbert; and Schmid, Ernst, 4,226,562, Cl. 409-233.000.
Schmidt, Klaus, to EWG Import u. Export GmbH & Co. Handelskommanditgesellschaft. Portable grilling device. 4,226,177, Cl. 99-372.000.
Schmidt, Manfred: *See*—
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Schmidt, Werner; and Scholz, Walter. Long-distance truck cabin. 4,226,460, Cl. 296-37.700.
Schmitt, Frederick L.: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,226,729, Cl. 252-8.900.
Schmitt, Gunther: *See*—
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Schmitt, William C., to Milwaukee Faucets, Inc. Single lever faucet plastic cartridge valve. 4,226,260, Cl. 137-315.000.
Schmucker, Wolfgang: *See*—
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Schneider, Eckart: *See*—
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Schnoes, Heinrich K.: *See*—
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DeLuca, Hector F.; Schnoes, Heinrich K.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, 4,226,788, Cl. 260-397.200.
Schnur, Rodney C., to Pfizer Inc. Novel spiro-oxazolidinediones. 4,226,875, Cl. 424-272.000.
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Scholz, Walter: *See*—
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Schor, Joseph M., to Forest Laboratories Inc. Sustained release therapeutic compositions. 4,226,849, Cl. 424-19.000.
Schorling, Stefan H. G., to Atlas Copco Aktiebolag. Overload protection device in air-operated lifting devices. 4,226,403, Cl. 254-273.000.
Schreinemakers, Josephus, to Dental Holding N.V. Zero-degree posterior teeth for a lower and an upper denture. 4,226,592, Cl. 433-197.000.
Schroeder, George F.; and Ferriss, Lincoln S., to Singer Company, The. Multifrequency control from a single crystal. 4,227,158, Cl. 331-2.000.
Schroeder, Hansjuergen A.: *See*—
Katz, Lawrence E.; Gay, Walter A.; and Schroeder, Hansjuergen A., 4,226,609, Cl. 71-64.00F.
Schroeder, Hartmut R.: *See*—
Buckler, Robert T.; and Schroeder, Hartmut R., 4,226,992, Cl. 544-234.000.
Buckler, Robert T.; and Schroeder, Hartmut R., 4,226,993, Cl. 544-237.000.
Schroeder, Wilburn C. Ash removal and synthesis gas generation from heavy oils produced by coal hydrogenation. 4,226,698, Cl. 208-8.00R.
Schulson, Erland M.; and Cameron, Donald J., to Canada, Atomic Energy of, Limited. Heat-treated zirconium alloy product. 4,226,647, Cl. 148-32.500.
Schulz, Donald N.; and Trivedi, Prakash D., to Firestone Tire & Rubber Company, The. Graft copolymers containing polyoxazoline and polyoxazine, and the preparation thereof. 4,226,746, Cl. 260-3.300.
Schulz, Donald N.; and Trivedi, Prakash D., to Firestone Tire & Rubber Company, The. Graft copolymers containing polyoxazoline and polyoxazine, and the preparation thereof. 4,226,956, Cl. 525-330.000.
Schulz, Donald N.; Kang, Jung W.; and Spiewak, John W., to Firestone Tire & Rubber Company, The. Process for preparing poly(organophosphazenes) from soluble or gelled poly(dichlorophosphazenes). 4,226,972, Cl. 528-168.000.
Schulz, Ralf-Thilo; Brunsch, Klaus; and Woerndle, Rudolf, to Messerschmitt-Boelkow-Blohm Gesellischaft mit beschraenkter Haftung. Force transmitting loop made of fiber composite material. 4,226,916, Cl. 428-542.000.
Schuster, Dietrich. Cooling, lubricating, and cleaning agent. 4,226,734, Cl. 252-49.300.
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Schweim, Donald E., to King Minnow, Inc. Live bait dispenser. 4,226,338, Cl. 222-162.000.
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SCI Systems, Inc.: *See*—
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SCM Corporation: *See*—
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Gawrilow, Ilija, 4,226,894, Cl. 426-606.000.
Miller, Donald E.; and Werstak, Charles E., 4,226,895, Cl. 426-658.000.
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Scordato, Emil A.: *See*—
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Scott, William J., to Ideal Industries, Inc. Screw-on electrical connector. 4,227,040, Cl. 174-87.000.

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Seachman, Ned J.: *See—*
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Seanor, Donald A.; and Nagel, Judy P., to Xerox Corporation. Corona charging element. 4,227,234, Cl. 361-229.000.
Seese, Mark A.; Albers, Edwin W.; and Magee, John S., Jr., to W. R. Grace & Co. Silica-alumina hydrogel catalyst. 4,226,743, Cl. 252-453.000.
Seidenberger, James W., to J. T. Baker Chemical Company. Mercury contamination indicator and decontamination aid. 4,226,600, Cl. 23-232.00R.
Seidewand, Robert J.: *See—*
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Seiler, Claus-Dietrich: *See—*
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Semur, Pierre; and Basset, Marcel, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Switching matrix for wide band electric transmission signals. 4,227,094, Cl. 307-113.000.
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Shafer, David R., to Perkin-Elmer Corporation, The. Four mirror unobscured anastigmatic telescope with all spherical surfaces. 4,226,501, Cl. 350-55.000.
Shaffer, John W.; and Armstrong, Donald E., to GTE Products Corporation. Photoflash unit with formed insulating sheet. 4,227,240, Cl. 362-13.000.
Shaffer, Myron W., to Laminating Equipment, Inc. Laminating apparatus. 4,226,664, Cl. 156-499.000.
Shah, Mahendra: *See—*
Goldberg, Bruce S.; and Shah, Mahendra, 4,226,926, Cl. 429-252.000.
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., to Ethicon, Inc. Surgical devices of polyesteramides derived from bis-oxamidodiols and dicarboxylic acids. 4,226,243, Cl. 128-335.500.
Shanks, Ian A., to National Research Development Corporation. Method and apparatus for matrix addressing opto-electric displays. 4,227,193, Cl. 340-784.000.
Sharkey, Stephen R. Method and device for time-recording. 4,227,199, Cl. 346-1.100.
Sharma, Nawal K.: *See—*
Griffith, Gary L.; and Sharma, Nawal K., 4,226,659, Cl. 156-305.000.
Sharma, Virendra N.: *See—*
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Sharp Kabushiki Kaisha: *See—*
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Matsui, Hirotoshi, 4,226,180, Cl. 101-111.000.
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McVey, John K.; and Sharp, Larry L., 4,227,169, Cl. 337-182.000.
Sharp, Roy T., to Lucas Industries Limited. Screw and nut mechanism. 4,226,137, Cl. 74-459.000.
Shatterproof Glass Corporation: *See—*
McKelvey, Harold E., 4,226,608, Cl. 65-106.000.
Sheldon, Dana M. Stove bench. 4,226,363, Cl. 237-54.000.
Sheldon, Dwight M., III; and Beezhold, F. Lee, to Place, Kenneth T. Apparatus for applying sprout inhibitor. 4,226,179, Cl. 99-475.000.
Shell Oil Company: *See—*
Bakker, Pieter M.; Kind, Cornelis E.; and Aurich, Volker G., 4,226,797, Cl. 260-460.000.
Denison, Early B., 4,226,116, Cl. 73-151.000.
Pilgram, Kurt H., 4,226,612, Cl. 71-88.000.
Shelton, Harold E. Glass breaking machine. 4,226,377, Cl. 241-99.000.
Shepherd, Robert G., to American Cyanamid Company. 4-[(Cycloalkyl or cycloalkenyl substituted)amino, alkylamino or alkenylamino]benzoic acids and salts thereof. 4,227,014, Cl. 562-457.000.
Shepp, Lawrence A.: *See—*
Maydan, Dan; and Shepp, Lawrence A., 4,227,088, Cl. 250-445.00T.
Sherinski, Lawrence R., to General Electric Company. Apparatus for infrared laser spectroscopy of room temperature vulcanizable silicone compositions. 4,227,083, Cl. 250-343.000.
Sherman, Robert E. Two digit resistance decade box. 4,227,172, Cl. 338-123.000.
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Sherwood-Selpac Corporation: *See—*
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Shibahara, Tetsuya: *See—*
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Shibasaki, Ichiro; Ohmura, Kaoru; Kimura, Takeo; and Kobayashi, Hidehiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Thin-film microcircuit board. 4,227,039, Cl. 174-68.500.
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Shigematsu, Taichiro; Shibahara, Tetsuya; Kasugai, Hiroshi; Nakajima, Tetsuo; and Motojima, Shozo, to Mitsubishi Chemical Industries Ltd. Plant viral disease preventive alginate containing compositions. 4,226,855, Cl. 424-177.000.
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Isobe, Mitsuhide, 4,226,130, Cl. 474-82.000.
Nagano, Masashi; and Isobe, Mitsuhide, 4,226,132, Cl. 474-82.000.
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Shimizu, Takeshi, to Kabushikikaisha Anoa. Bridge-linking table game. 4,226,421, Cl. 273-275.000.
Shimoma, Taketoshi; and Fukuda, Kumio, to Tokyo Shibaura Electric Co., Ltd. Exposure device for making a stripe screen on a faceplate of a color cathode ray tube. 4,226,513, Cl. 354-1.000.
Shin-Etsu Chemical Co., Ltd.: *See—*
Onda, Yoshiro; Muto, Hiroaki; and Maruyama, Kazumasa, 4,226,981, Cl. 536-66.000.
Shin, Hee J.; and Shin, Jung H. Multiple joint retractor with light. 4,226,228, Cl. 128-20.000.
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Shin, Hee J.; and Shin, Jung H., 4,226,228, Cl. 128-20.000.
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Shioyama, Tod K., to Phillips Petroleum Company. Hydrogenation of unsaturated dinitriles using catalyst comprising reaction products of nickel compound and of a palladium compound each with an alkali metal borohydride. 4,226,809, Cl. 260-583.00P.
Shirahata, Ryuji; and Kitamoto, Tatsuji, to Fuji Photo Film Co., Ltd. Process for the production of a magnetic recording medium. 4,226,681, Cl. 204-38.0ST.
Shiraishi, Makoto; Uchida, Hiroshi; Koizumi, Yoshinori; and Saito, Akira, to Kurara Co., Ltd. Method for producing vinyl chloride resins. 4,226,966, Cl. 526-202.000.
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Shudo, Taro; Kudo, Bosshi; and Tamai, Yasushi, to Mitsubishi Kinzoku Kabushiki Kaisha; and Japan Silicon Co., Ltd. Lateral pulling growth of crystal ribbons and apparatus therefor. 4,226,834, Cl. 422-249.000.
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Shutt, Jeffrey G. Multiple positionable hand tool holder. 4,226,457, Cl. 294-15.000.
Sick, Erwin, to Erwin Sick GmbH, Optik-Elektronik. Optical monitoring apparatus. 4,227,091, Cl. 250-572.000.
Siebtechnik GmbH: *See—*
Sturmer, Fritz G., 4,226,724, Cl. 210-376.000.
Siecker, Cornelis, to Cabooiture Co-Operative Associates Limited. Manufacture of pasta filata cheese. 4,226,888, Cl. 426-36.000.
Siegman, Edwin J., to American Cyanamid Company. Purging for spinning hydrated acrylic polymer melt. 4,226,817, Cl. 264-39.000.
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Oestreich, Ulrich, 4,226,653, Cl. 156-73.500.
Stuwe, Botho, 4,226,919, Cl. 429-25.000.
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Sienkowski, Kenneth J.; Nicholson, Richard R.; and Smith, Ray E., to Velsicol Chemical Corporation. Flame retardant article. 4,226,907, Cl. 428-288.000.
Signode Corporation: *See*—
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Siliberschlag, Russel E., to Borg-Warner Corporation. Speed responsive rotary coupling. 4,226,309, Cl. 192-3.310.
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Simjian, Luther G. Metering system. 4,226,360, Cl. 235-375.000.
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Lang, Charles W.; and Beneventano, Thomas, 4,227,144, Cl. 323-121.000.
Schroeder, George F.; and Ferriss, Lincoln S., 4,227,158, Cl. 331-2.000.
Vojvodich, Mario M.; and Theall, Charles E., Jr., 4,227,260, Cl. 455-601.000.
Waugh, John B. S., 4,226,125, Cl. 73-708.000.
Siravo, Vincent F.: *See*—
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Skarman, John S., to A 1000 Words Incorporated. Camera device. 4,226,517, Cl. 354-75.000.
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Frolov, Jury F.; Piljukov, Jury F.; Cherednichenko, Vladimir S.; Orlov, Gennady I.; Kurapin, Igor N.; Shabalina, Roza I.; Lakernik, Mark M.; Gavrilenko, Alexandr F.; Yakovenko, Anatoly A.; Elkina, Alla K.; Golovachev, Anatoly I.; Egorova, Tatyana S.; Vlasov, Jury M.; Smelyansky, Matvei Y., deceased; and Zelichenko, Faina S., administator, 4,226,406, Cl. 266-148.000.
Smith, Buford B. Roll of plastic film aprons. 4,225,977, Cl. 2-48.000.
Smith, Curtis P.; and Temme, George H., to Upjohn Company, The. Process for preparing organo-arsenic derivatives of polystyrene and related polymers. 4,226,958, Cl. 525-356.000.
Smith, John C.: *See*—
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Smith, Leonard S., to Century Mfg. Co. External means for increasing the sensitivity of a moving magnet type of meter. 4,227,148, Cl. 324-115.000.
Smith, Ray E.: *See*—
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Smith, Robert H., to Atlantic Richfield Company. Process for reducing sulfur contaminant emissions from burning coal or lignite that contains sulfur. 4,226,601, Cl. 44-10.00D.
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Snowman, Lawrence R., to General Electric Company. Optical particle detector. 4,226,533, Cl. 356-338.000.
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Societa Nazionale Industria Applicazioni Viscosa S.p.A.: *See*—
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Societe Anonyme dite: Anciens Ets P. Lemaire & Cie: *See*—
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"Societe Anonyme" Expansia: *See*—
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Societe Anonyme Francaise du Ferodo: *See*—
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Societe d'Etudes de Machines Thermiques S.E.M.T.: *See*—
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Boros, Jozsef; Csillag, Zsolt; Ferenczi, Tibor; Kalman, Tibor; Lengyel, Laszlo; Matyasi, Jozsef; Orban, Ferenc; Solymar, Karoly; Toth, Bela; Toth, Lajos; Voros, Istan; Wentzely, Kalman; Zambo, Janos; and Zoldi, Jozsef, 4,226,838, Cl. 423-121.000.
Sompayrac, Hewitt A. Stable dental composition containing hydrogen peroxide. 4,226,851, Cl. 424-53.000.
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Spadaccini, Louis J., to United Technologies Corporation. Flameholder for gas turbine engine. 4,226,087, Cl. 60-749.000.
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Spelts, William R. Reamer stabilizer for rock drills. 4,226,291, Cl. 175-325.000.
Spence-Bate, Harry A. H.; and Bain-Smith, Timothy, to Spence-Bate, Harry Arthur Hele. Transport and positioning mechanism. 4,226,526, Cl. 355-53.000.
Spence-Bate, Harry Arthur Hele: *See*—
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Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Fabric softener compositions and articles containing 2-oxabicycloctane derivatives and processes for preparing same. 4,226,729, Cl. 252-8.900.
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Stolfo, John J., to Mead Corporation, The. Production of novel metal modified novolak resins and their use in pressure sensitive papers. 4,226,962, Cl. 525-506.000.
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Sturmer, Fritz G., to Siebtechnik GmbH. Two-stage pusher centrifuge. 4,226,724, Cl. 210-376.000.
Sturtz, Charles R., Jr.; and Joworski, Robert W., to Clark Equipment Company. Tree harvester. 4,226,270, Cl. 144-2.00Z.
Stuwe, Botho, to Siemens Aktiengesellschaft. Hydrogen/oxygen fuel cell. 4,226,919, Cl. 429-25.000.
Styron, Robert W., to Amax Resource Recovery Systems, Inc. Leach-resistant solid bodies from fly ash and heavy metal sludge. 4,226,630, Cl. 106-85.000.
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Sugiyama, Makoto, to KAI Cutlery Center Co., Ltd. Cleaning member for two-edge shaving blade unit. 4,226,019, Cl. 30-41.000.
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Svatek, Thomas A., to Polaroid Corporation. Sound module for motion picture cameras. 4,226,510, Cl. 352-31.000.

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Szabo, Bela G., to Bruce Plastics, Inc. Plastic garment hangers with integrally molded clasps therefor. 4,226,345, Cl. 223-91.000.

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Tabuchi, Heizi; and Itoh, Toshiaki, to Central Glass Company, Limited. Electrofusion method of producing boron aluminum oxide refractory. 4,226,629, Cl. 106-65.000.

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Takahashi, Hiroyoshi: *See*—
Kobayashi, Eiji; and Takahashi, Hiroyoshi, 4,226,158, Cl. 84-239.000.

Takahashi, Kouichi; Ishida, Hidekuni; and Yonezawa, Toshio. Method of reducing emitter dip in transistors utilizing specifically paired dopants. 4,226,650, Cl. 148-188.000.

Takahashi, Shiro; and Tsuchimoto, Yoshihiro, to Asahi Glass Company, Limited. Apparatus for feeding glass batch materials into a glass melting furnace. 4,226,564, Cl. 414-166.000.

Takahashi, Yohji: *See*—
Yamamoto, Izuru; Takahashi, Yohji; and Kyomura, Nobuo, 4,226,883, Cl. 424-300.000.

Takahashi, Yuzo; Maeda, Yoshinari; Tanaka, Yasuyuki; Nagai, Kastumi; and Oyama, Shiro, to Hokkai Can Co., Ltd. Equipment for forming can bodies. 4,226,201, Cl. 113-12.000.

Takai, Kazuki: *See*—
Umezawa, Hiroyuki; Ito, Yukio; Takai, Kazuki; and Okada, Hitoshi, 4,227,224, Cl. 360-96.500.

Takaishi, Naotake: *See*—
Matsunaga, Kinjiro; Masuda, Shin-ichi; Nakagawa, Yunosuke; and Takaishi, Naotake, 4,226,748, Cl. 260-17.00A.

Takanashi, Itsuo; Motoyama, Koichiro; Miyoshi, Tadayoshi; Nakagaki, Shintaro; Yokokawa, Sumio; and Miyazaki, Kenichi, to Victor Company of Japan, Ltd. Optical comb filter. 4,227,208, Cl. 358-55.000.

Takano, Hironori: *See*—
Ohta, Kazutoshi; and Takano, Hironori, 4,226,078, Cl. 57-213.000.

Takao, Toshinori: *See*—
Tsurushige, Normitsu; Takao, Toshinori; and Yamada, Shinichi, 4,226,943, Cl. 521-73.000.

Takaoka, Yukio: *See*—
Kawasaki, Masahiro; and Takaoka, Yukio, 4,226,521, Cl. 354-271.000.

Takematsu, Tetsuo; Konnai, Makoto; Suzuki, Akira; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, to Meiji Selka Kaisha, Ltd. Herbicidal compounds, preparation thereof and herbicides containing the same. 4,226,610, Cl. 71-86.000.

Takemoto, Takeshi, to Ricoh Company, Ltd. Carriage guide mechanism for use in scanning device. 4,227,219, Cl. 358-289.000.

Takesako, Yoshinobu: *See*—
Watanabe, Masanori; Nonomura, Kinzo; and Takesako, Yoshinobu, 4,227,117, Cl. 315-13.00R.

Takeuchi, Koshi: *See*—
Hashimoto, Shigeru; Masuda, Akira; Mochizuki, Katura; Satoh, Akira; Takeuchi, Koshi; and Oda, Teruhisa, 4,226,505, Cl. 350-252.000.

Takimoto, Yasuyuki; Tanabe, Kunsei; Saito, Shin; Nishimura, Masakatsu; and Umeda, Yasushi, to Nippon Paint Co., Ltd. Electrophotographic method for producing photopolymer printing plate. 4,226,930, Cl. 430-126.000.

Talos Systems, Inc.: *See*—
Fencl, George A., 4,227,044, Cl. 178-19.000.

Tamai, Yasushi: *See*—
Shudo, Taro; Kudo, Bosshi; and Tamai, Yasushi, 4,226,834, Cl. 422-249.000.

Tamao, Yoshikuni: *See*—
Okamoto, Shosuke; Kikumoto, Ryoji; Tamao, Yoshikuni; Tonomura, Shinji; and Ohkubo, Kazuo, 4,227,006, Cl. 560-10.000.

Tamori, Michitoshi; Furuya, Katsuhiko; Yanagidaira, Hidetaka; and Sakaki, Hiroshi, to Kokusai Denshin Denwa Co., Ltd. Transversal type automatic equalizer. 4,227,160, Cl. 333-18.000.

Tamplin, Lyle R.: *See*—
Rallis, Rallie P.; Cullity, Richard E.; and Tamplin, Lyle R., 4,226,300, Cl. 182-2.000.

Tamura, Fumio: *See*—
Asano, Kiro; Tamura, Fumio; Kawai, Yoshio; and Yamaki, Kiyoshi, 4,226,633, Cl. 106-269.000.

Tanabe, Kunsei: *See*—
Takimoto, Yasuyuki; Tanabe, Kunsei; Saito, Shin; Nishimura, Masakatsu; and Umeda, Yasushi, 4,226,930, Cl. 430-126.000.

Tanaka, Eiji: *See*—
Tanaka, Toru; Okano, Shigeaki; and Tanaka, Eiji, 4,226,964, Cl. 526-114.000.

Tanaka, Haruo: *See*—
Omura, Satoshi; Kitao, Chiaki; Nakagawa, Akira; Tanaka, Haruo; Awaya, Juichi; and Oiwa, Ruiko, 4,226,879, Cl. 424-278.000.

Tanaka, Kazuhiro: *See*—
Motegi, Masahiko; Tanaka, Kazuhiro; and Fujita, Saburo, 4,226,826, Cl. 264-235.800.

Tanaka, Toru; Okano, Shigeaki; and Tanaka, Eiji, to Mitsubishi Chemical Industries Ltd. Process for polymerizing olefin. 4,226,964, Cl. 526-114.000.

Tanaka, Yasuyuki: *See*—
Takahashi, Yuzo; Maeda, Yoshinari; Tanaka, Yasuyuki; Nagai, Kastumi; and Oyama, Shiro, 4,226,201, Cl. 113-12.000.

Tanaka, Yoko: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, 4,226,788, Cl. 260-397.200.

Tanco, Juan J.: *See*—
Uram, Robert; and Tanco, Juan J., 4,227,093, Cl. 290-40.00R.

Tarpley, William B., Jr.; Huzinec, John R.; and Freeman, Marion K., to Energy & Minerals Research Co. Persistent fire suppressant composition. 4,226,727, Cl. 252-8.000.

Tarrer, Harold M. Grill and rack cleaning container. 4,226,255, Cl. 134-117.000.

Tasch, Al F., Jr.; and Chatterjee, Pallab K., to Texas Instruments Incorporated. Dual plane barrier-type two-phase CCD. 4,227,202, Cl. 357-24.000.

Tashiro, Takashi; Sugai, Manabu; and Matsumoto, Akira, to Matsushita Electric Industrial Co., Inc. Cassette tape player. 4,227,226, Cl. 360-137.000.

Tatabanyai Szenbanyak: *See*—
Kapolyi, Laszlo; Szentgyorgyi, Geza; Vamos, Gyorgy; Grzymek, Jerzy; Grzymek, Anna D.; Bethke, Stanislaw; and Werynski, Bronislaw, 4,226,632, Cl. 106-100.000.

Tateoka, Masamichi: *See*—
Minoura, Kazuo; and Tateoka, Masamichi, 4,226,500, Cl. 350-6.100.

Tatsumi, Susumu: *See*—
Sakamoto, Koji; Miyakawa, Seiichi; and Tatsumi, Susumu, 4,226,525, Cl. 355-14.00D.

Tauber, Arthur: *See*—
Rothwarf, Frederick; Bergner, Robert L.; Leupold, Herbert A.; and Tauber, Arthur, 4,226,620, Cl. 75-134.00C.

Taylor, Leonard H. Positive identification system for authenticating the identity of a card user. 4,226,361, Cl. 235-380.000.

Tazima, Kenji: *See*—
Nakahara, Yutaka; Haruna, Tohru; and Tazima, Kenji, 4,226,991, Cl. 544-221.000.

Tazuke, Shigeo; and Nagahara, Hajime, to Asahi Kasei Kogyo Kabushiki Kaisha. Highly charge-transferable polycondensation polymer and process for preparation. 4,226,967, Cl. 528-74.000.

Technical Systems Co.: *See*—
Rehm, William A., 4,226,726, Cl. 210-512.00M.

Teepak, Inc.: *See*—
Bridgeford, Douglas J., 4,226,264, Cl. 738-118.100.

Teijin Limited: *See*—
Nagai, Tsuneji; Machida, Yoshiharu; Suzuki, Yoshiki; and Ikura, Hiroshi, 4,226,848, Cl. 424-19.000.

Teitel, Sidney: *See*—
Gurien, Harvey; and Teitel, Sidney, 4,226,774, Cl. 260-315.000.

Tektronix, Inc.: *See*—
Ishijima, Yasumori; and Murooka, Rikichi, 4,227,121, Cl. 315-367.000.

Telcom, Inc.: *See*—
Carrick, Robert L.; Manning, William T.; and Grimes, Robert E., 4,227,255, Cl. 455-226.000.

Temme, George H.: *See*—
Smith, Curtis P.; and Temme, George H., 4,226,958, Cl. 525-356.000.

Tenneco Chemicals, Inc.: *See*—
Feldman, Martin L.; and DeGroff, James T., 4,226,760, Cl. 260-42.140.
Goodman, Donald; Koral, Marvin; Miller, Robert S.; and Stanaback, Robert J., 4,226,974, Cl. 528-483.000.
Goodman, Donald; Koral, Marvin; Miller, Robert S.; and Stanaback, Robert J., 4,226,975, Cl. 528-483.000.
Goodman, Donald; Koral, Marvin; Miller, Robert S.; and Stanaback, Robert J., 4,226,976, Cl. 528-498.000.
Stone, Herman; and Pauly, Peter D., 4,226,944, Cl. 521-76.000.

Terner, Leslie L.; Moskowitz, David; and Van Alsten, Roy L., to Ford Motor Company. Novel spraying composition, method of applying the same and article produced thereby. 4,226,914, Cl. 428-446.000.

Terrell Machine Company, The: *See*—
Niederer, Kurt W.; and Terrell, Robert E., 4,226,715, Cl. 210-783.000.

Terrell, Robert E.: *See*—
Niederer, Kurt W.; and Terrell, Robert E., 4,226,715, Cl. 210-783.000.

Teshima, Toru; Nozaki, Hiroshi; Koyama, Minoru; and Katoh, Kazuhisa, to Stanley Electric Co., Ltd. Flexible multi-layer photoreceptor of electrophotography. 4,226,929, Cl. 430-57.000.

Tesmann, Holger; Weinrich, Erwin; and Lieske, Edgar, to enkel Kommanditgesellschaft auf Aktien. Two-component peroxide hair bleaching compositions. 4,226,852, Cl. 424-62.000.

Tetenborg, Konrad: *See*—
Achelpohl, Fritz; and Tetenborg, Konrad, 4,226,458, Cl. 294-88.000.

Texaco Development Corp.: *See*—
Hunter, Walter D., 4,226,730, Cl. 252-8.55D.
Hunter, Walter D., 4,226,731, Cl. 252-8.55D.
McCoy, David R., 4,226,807, Cl. 260-512.00R.
Waddill, Harold G.; and Klein, Howard P., 4,226,971, Cl. 528-162.000.

Texaco Inc.: *See*—
Elliott, Lloyd E., Jr., 4,227,124, Cl. 315-408.000.
Reinhard, Russell R.; and Yaffe, Roberta, 4,226,732, Cl. 252-32.500.

Texas Instruments Incorporated: *See*—
Baboian, Robert; Haynes, Gardner S.; and Delagi, Richard G., 4,226,694, Cl. 204-196.000.
Bray, William E., 4,227,230, Cl. 361-152.000.
Kronlage, John W., 4,227,185, Cl. 340-347.0NT.
Tasch, Al F., Jr.; and Chatterjee, Pallab K., 4,227,202, Cl. 357-24.000.

Texscan Corporation: *See*—
Palle, Robert J.; Smith, Sidney R.; Rockwell, Kenton D.; and Napierski, Charles F., 4,226,495, Cl. 339-122.00R.

Thayer, Philip C.: *See*—
Tiffany, Thomas O.; Manning, Gilbert B.; Thayer, Philip C.; and Coelho, Chris M., 4,226,531, Cl. 356-246.000.

Theall, Charles E., Jr.: *See*—
Vojvodich, Mario M.; and Theall, Charles E., Jr., 4,227,260, Cl. 455-601.000.

Theiler, Werner C., Sr., to Minnesota Mining and Manufacturing Company. Crimping tool for automotive ignition terminals and the like. 4,225,990, Cl. 7-107.000.

Thesing, Wilhelm: *See*—
Pollmeier, Konrad; and Thesing, Wilhelm, 4,226,197, Cl. 112-121.110.

Thiel, Ronald A.; and Maurer, Edward H., to General Dynamics Corporation Electronics Division. Method for fabricating controlled TCR thin film resistors. 4,226,899, Cl. 427-101.000.

Thielen, James E., to Minnesota Mining and Manufacturing Company. Dust mop frame. 4,225,998, Cl. 15-231.000.

Thiene, Paul G., to Surgical Mechanical Research. Automatic return for patient chair. 4,227,131, Cl. 318-467.000.

Thirion, Philippe E.: *See*—
Godard, Dominique N.; and Thirion, Philippe E., 4,227,152, Cl. 375-13.000.

Thoma, Georg. Hydraulical damping element, in particular for damping of the swivel movement of a movie or television camera which is secured on a head of a tripod. 4,226,303, Cl. 188-1.00B.

Thomann, Helmut; and Grabmaier, Christa, to Siemens Aktiengesellschaft. Method of detecting high energy radiation via a bismuth oxide compound. 4,227,084, Cl. 250-370.000.

Thomas, Alan F., to Firmenich, S.A. Cis-10,10-dimethyl-tricyclo[7.1.1.0^{2,7}]undec-2-en-4-one as perfuming ingredient. 4,226,745, Cl. 252-522.00R.

Thomas J. Lipton, Inc.: *See*—
Danielsen, Kennet; and Nielsen, Torben, 4,226,182, Cl. 101-129.000.

Thomas, Ulrich H., to Banthrico Inc. Drive-in teller coin bank. 4,226,044, Cl. 46-4.000.

Thomas, Walter C.: *See*—
Thomas, Wayne W.; and Thomas, Walter C., 4,227,051, Cl. 179-1.00E.

Thomas, Wayne W.; and Thomas, Walter C. Loud speaker and enclosure system. 4,227,051, Cl. 179-1.00E.

Thomas, William J.; and Adam, John E. Self-cleaning brush. 4,225,997, Cl. 15-184.000.

Thompson, John H.: *See*—
Douglas, George R.; and Thompson, John H., 4,227,110, Cl. 310-316.000.

Thompson, Norman, to Beta Aluminium Products Limited. Louvre Windows. 4,226,051, Cl. 49-403.000.

Thomson-CSF: *See*—
Gerard, Rene; and Lacombat, Michel, 4,226,569, Cl. 414-737.000.
Mayeux, Christian; and Micheron, Francois, 4,227,082, Cl. 250-336.000.

Thomson, Ian W.; Limbaugh, Charles D.; and Burch, JoEllen. Audio system for isolating sounds from individual components of drum set-up for selectively mixing. 4,227,049, Cl. 179-1.00M.

Thorsrud, Lee T.; and Spencer, Gary A., to Sperry Corporation. Closed loop address. 4,227,244, Cl. 364-200.000.

Thou, Kaing S.: *See*—
Paquet, Denis; Thou, Kaing S.; and Alais, Charles, 4,226,893, Cl. 426-564.000.

Tick, Paul A.: *See*—
Bartholomew, Roger F.; Dorfeld, William G.; Murphy, James A.; Pierson, Joseph E.; Stookey, Stanley D.; and Tick, Paul A., 4,226,628, Cl. 106-47.00R.

Tiffany, Thomas O.; Manning, Gilbert B.; Thayer, Philip C.; and Coelho, Chris M., to Instrumentation Laboratory Inc. Disposable multicuvette rotor. 4,226,531, Cl. 356-246.000.

Tilghman, Bill W. Toy parachute releasable from a kite string. 4,226,388, Cl. 244-155.00R.

Tisue, James G. Method and apparatus for suppressing the effects of surface light scatter in optical reflective scanning system. 4,226,541, Cl. 356-446.000.

Tobler, Bruno; and Sigrist, Hugo, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Projectile with a payload. 4,226,185, Cl. 102-35.400.

Toeniskoetter, Richard H.; and Spiwak, John J., to Ashland Oil, Inc. Binder composition containing alcohol. 4,226,626, Cl. 106-38.350.

Tokuyama Soda Kabushiki Kaisha: *See*—
Mizutani, Yukio; Watanabe, Yoshiaki; and Taga, Genji, 4,226,636, Cl. 106-306.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Komeya, Katsutoshi; Inoue, Hiroshi; Kudo, Haruo; and Endo, Hiroshi, 4,226,841, Cl. 423-345.000.
Ogawa, Seishi, 4,227,059, Cl. 200-153.00G.
Yamaguchi, Hiroyasu, 4,227,227, Cl. 361-86.000.

Tokyo Shibaura Electric Co., Ltd.: *See*—
Gomi, Hiroshi, 4,227,205, Cl. 358-28.000.
Shimoma, Taketoshi; and Fukuda, Kumio, 4,226,513, Cl. 354-1.000.
Washizu, Teruo; and Goto, Eizo, 4,227,108, Cl. 310-214.000.

Tomita, Takao; and Morita, Isamu, to Honda Giken Kogyo Kabushiki Kaisha. Hydraulic shock absorber for vehicles. 4,226,408, Cl. 267-64.00B.

Tomyn, Dmytro. Electronic currency counter. 4,227,071, Cl. 235-92.0SB.

Tonomura, Shinji: *See*—
Okamoto, Shosuke; Kikumoto, Ryoji; Tamao, Yoshikuni; Tonomura, Shinji; and Ohkubo, Kazuo, 4,227,006, Cl. 560-10.000.

Toots, Jaan: *See*—
United States of America, National Aeronautics and Space Administration; Holdeman, Louis B.; Toots, Jaan; and Chang, Chu-Cheng, 4,227,096, Cl. 307-233.00R.

Topolosky, John J.: *See*—
Binstock, Morton H.; Lehmer, Robert C.; Johnson, Steven J.; Topolosky, John J.; and Smith, Thomas E., 4,226,086, Cl. 60-656.000.

Toppan Printing Co., Ltd.: *See*—
Ishizawa, Hideo; Niwayama, Akira; Shimizu, Mitsuru; and Kagami, Takashi, 4,226,933, Cl. 430-320.000.

Toray Industries, Inc.: *See*—
Motegi, Masahiko; Tanaka, Kazuhiro; and Fujita, Saburo, 4,226,826, Cl. 264-235.800.

Toro Company, The: *See*—
Hunter, Edwin J., 4,226,368, Cl. 239-542.000.

Torossian, Kevork A.: *See*—
Gottung, William H.; and Torossian, Kevork A., 4,226,903, Cl. 428-195.000.

Toscano, Lucian: *See*—
Riva, Mario; Palladino, Gaetano; and Toscano, Lucian, 4,226,862, Cl. 424-243.000.

Tosco Corporation: *See*—
Nutter, John F., 4,226,699, Cl. 208-11.00R.

Toshima, Tomoyuki: *See*—
Nakanishi, Takuji; Toshima, Tomoyuki; and Yanagisawa, Keiichi, 4,226,018, Cl. 29-603.000.

Toth, Bela: *See*—
Boros, Jozsef; Csillag, Zsolt; Ferenczi, Tibor; Kalman, Tibor; Lengyel, Laszlo; Matyasi, Jozsef; Orban, Ferenc; Solymar, Karoly; Toth, Bela; Toth, Lajos; Voros, Istan; Wentzely, Kalman; Zambo, Janos; and Zoldi, Jozsef, 4,226,838, Cl. 423-121.000.

Toth, Lajos: *See*—
Boros, Jozsef; Csillag, Zsolt; Ferenczi, Tibor; Kalman, Tibor; Lengyel, Laszlo; Matyasi, Jozsef; Orban, Ferenc; Solymar, Karoly; Toth, Bela; Toth, Lajos; Voros, Istan; Wentzely, Kalman; Zambo, Janos; and Zoldi, Jozsef, 4,226,838, Cl. 423-121.000.

Towns, Edward J.; and Brown, Edward M., to Downing, Neil H. Volume adjustment device. 4,226,341, Cl. 222-440.000.

Toyama, James. Billfold safety clip. 4,226,006, Cl. 24-3.00L.

Toyota, Akinori: *See*—
Luciani, Luciano; Kashiwa, Norio; Barbe, Pier C.; and Toyota, Akinori, 4,226,741, Cl. 252-429.00B.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Kohama, Tokio; Matsui, Takeshi; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, 4,226,222, Cl. 123-568.000.
Morisawa, Kunio; and Kyushima, Tatsuo, 4,226,200, Cl. 74-606.00R.
Nogami, Tomoyuki, 4,226,480, Cl. 303-24.00C.
Suzuki, Yukio; and Sato, Kunihiko, 4,226,220, Cl. 123-408.000.

Tracol, Andre G.: *See*—
Gergaud, Claude J.; Grimanelli, Etienne; and Tracol, Andre G., 4,227,178, Cl. 340-147.00R.

Tranberg, Erik R.; and Widen, Bo G., to GKN-Stenman AB. Lock follower, particularly a handle or pressure follower, and a method of manufacturing the same. 4,226,454, Cl. 292-336.500.

Transicoil, Inc.: *See*—
Malakian, Vahe H.; and Hendricks, Howard F., 4,227,101, Cl. 310-49.00R.
Traube, Horst: *See*—
Klingler, Karl H.; and Traube, Horst, 4,226,803, Cl. 260-501.110.
Tribolet, Herbert. Wet and dry vacuum cleaning system. 4,226,000, Cl. 15-321.000.
Trinkwalder, Joseph C., to Sherwood-Selpac Corporation. Scuba regulator. 4,226,257, Cl. 137-81.200.
Trivedi, Prakash D.: *See*—
Schulz, Donald N.; and Trivedi, Prakash D., 4,226,746, Cl. 260-3.300.
Schulz, Donald N.; and Trivedi, Prakash D., 4,226,956, Cl. 525-330.000.
Troesch, Louis. Tissue treatment dispenser. 4,226,340, Cl. 222-183.000.
Trudeau, Curtis A., to CMI Corporation. Axle-load distributing apparatus. 4,226,437, Cl. 280-405.00R.
TRW Inc.: *See*—
Hunt, Delbert E., 4,226,011, Cl. 29-25.420.
Tsang, Floris Y., to Dow Chemical Company, The. Selective plugging of broken fibers in tubesheet-hollow fiber assemblies. 4,226,921, Cl. 429-104.000.
Tseng, Shin-Shyong: *See*—
Rauhut, Michael M.; Tseng, Shin-Shyong; and Mohan, Arthur G., 4,226,738, Cl. 252-188.3CL.
Tsuchimoto, Yoshihiro: *See*—
Takahashi, Shiro; and Tsuchimoto, Yoshihiro, 4,226,564, Cl. 414-166.000.
Tsuji, Teruji: *See*—
Narisada, Masayuki; Tsuji, Teruji; Yoshioka, Mitsuru; Hiromu, Matsumura; Hamashima, Yoshio; Hayashi, Sadao; and Nagata, Wataru, 4,226,864, Cl. 424-248.500.
Tsuji, Terutsugu; Sato, Shigeji; Fujioka, Keiji; Yamahira, Yoshiya; and Maeda, Tadao, to Sumitomo Chemical Company, Limited. Process for preparing a solid preparation of a penicillin derivative. 4,226,769, Cl. 260-239.100.
Tsuji, Toshihiko; and Sakai, Riyouji, to Nippon Kinzoku Co., Ltd. Reactor. 4,227,166, Cl. 336-229.000.
Tsukada, Toshihisa: *See*—
Yamamoto, Hideaki; Matsumaru, Haruo; Matsui, Makoto; Tsukada, Toshihisa; Hirai, Tadaaki; and Maruyama, Eiichi, 4,227,078, Cl. 250-227.000.
Tsukahara, Satoshi; Sato, Isao; Uchiyama, Yoshihiro; and Kusaba, Masanobu, to Hitachi, Ltd. Gas turbine combustor. 4,226,088, Cl. 60-752.000.
Tsunekawa, Tokuichi, to Canon Kabushiki Kaisha. Camera and viewfinder display device therefor. 4,226,516, Cl. 354-60.00E.
Tsuruoka, Masao; Yagi, Hideyuki; Morita, Keiichi; and Kuniya, Keiichi, to Hitachi, Ltd. Composite joint system including composite structure of carbon fibers embedded in copper matrix. 4,226,917, Cl. 428-111.000.
Tsuruoka, Takashi: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Suzuki, Akira; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,226,610, Cl. 71-86.000.
Tsurushige, Normitsu; Takao, Toshinori; and Yamada, Shinichi, to Otsuka Kagaku Yakuhin Kabushiki Kaisha. Foamable composition of vinyl chloride polymers and method of producing open cell sheet. 4,226,943, Cl. 521-73.000.
Tuchman, Walter L.: *See*—
Ehrsam, William F.; Elander, Robert C.; Hollis, Lloyd L.; Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Oseas, Jonathan; and Tuchman, Walter L., 4,227,253, Cl. 375-2.000.
Tucker, Frederick R., deceased: *See*—
Cochrane, Ian W.; Tucker, Frederick R., deceased; Tucker, Mary, co-executrix; Ackerman, George, co-executor; and Canada Permanent Trust Co., co-executor, 4,225,982, Cl. 3-7.000.
Tucker, Mary, co-executrix: *See*—
Cochrane, Ian W.; Tucker, Frederick R., deceased; Tucker, Mary, co-executrix; Ackerman, George, co-executor; and Canada Permanent Trust Co., co-executor, 4,225,982, Cl. 3-7.000.
Turk, Gunter: *See*—
Achenbach, Karl; and Turk, Gunter, 4,226,837, Cl. 423-118.000.
Turner, James E.: *See*—
Butler, James R.; Turner, James E.; and Goodhart, Frank W., 4,226,599, Cl. 23-230.00B.
Turner, Posie C. Compact foldable bootjack with positive locking device. 4,226,346, Cl. 223-115.000.
Tuson, Samuel, to Entreprise d'Equipements Mecaniques et Hydrauliques E.M.H. Off-shore mooring device for a large-sized floating body. 4,226,204, Cl. 114-230.000.
Ubiennykh, Svetlana N.: *See*—
Varlamov, Gennady D.; Bekbulatov, Ildgam A.; Madaliev, Shavkat; Mamatov, Juldash; Proshkina, Alexandra V.; and Ubiennykh, Svetlana N., 4,226,968, Cl. 528-91.000.
Uccellini, Anthony J. Carton grip. 4,226,349, Cl. 224-45.00P.
Uchida, Hiroshi: *See*—
Shiraishi, Makoto; Uchida, Hiroshi; Koizumi, Yoshinori; and Saito, Akira, 4,226,966, Cl. 526-202.000.
Uchiyama, Yoshihiro: *See*—
Tsukahara, Satoshi; Sato, Isao; Uchiyama, Yoshihiro; and Kusaba, Masanobu, 4,226,088, Cl. 60-752.000.
Ueda, Ichiro: *See*—
Nishida, Masamitsu; Kawashima, Syunichiro; Ueda, Ichiro; and Ouchi, Hiromu, 4,226,827, Cl. 264-332.000.
Ueda, Nobuo: *See*—
Mouri, Shingo; and Ueda, Nobuo, 4,226,254, Cl. 133-8.00E.
Uesugi, Kyozo, to Minolta Camera Kabushiki Kaisha. Shock resistant lens device. 4,226,520, Cl. 354-195.000.
Ukiana, Motohide: *See*—
Okura, Akimitsu; Saito, Syobu; and Ukiana, Motohide, 4,227,080, Cl. 250-311.000.
Umeda, Yasushi: *See*—
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Umezawa, Hiroyuki; Ito, Yukio; Takai, Kazuki; and Okada, Hitoshi, to Clarion Co., Ltd. Cassette tape recording/reproducing apparatus. 4,227,224, Cl. 360-96.500.
Union Carbide Corporation: *See*—
Critchfield, Frank E.; Gerkin, Richard M.; and Hawker, Leslie E., 4,226,756, Cl. 260-33.20R.
Kupcikevicius, Vytautas, 4,226,003, Cl. 17-49.000.
Potts, James E., 4,226,230, Cl. 128-90.000.
Union Oil Company of California: *See*—
Carlson, Robert K.; and Ferritto, James J., 4,226,900, Cl. 427-228.000.
United Kingdom Atomic Energy Authority: *See*—
Lane, Edward S., 4,226,983, Cl. 536-113.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
French, Herbert A., 4,226,529, Cl. 356-5.000.
United States of America
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McNamara, John V.; and Van Etten, Paul, 4,227,187, Cl. 340-347.00P.
Picklesimer, Lewellyn G., 4,226,800, Cl. 260-465.00F.
Army: *See*—
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Carr, Nathaniel, 4,226,016, Cl. 29-426.400.
Rothwarf, Frederick; Bergner, Robert L.; Leupold, Herbert A.; and Tauber, Arthur, 4,226,620, Cl. 75-134.00C.
Salerno, James; Liss, Fabian T.; and Weiss, Frank, 4,227,195, Cl. 343-17.10R.
Energy: *See*—
Botts, Thomas E.; and Powell, James R., 4,226,369, Cl. 241-1.000.
Caputo, Anthony J.; Costanzo, Dante A.; Lackey, Walter J., Jr.; Layton, Frank L.; and Stinton, David P., 4,227,081, Cl. 250-321.000.
Cottingham, James G., 4,226,657, Cl. 156-196.000.
Mazur, Peter O.; and Pallaver, Carl B., 4,226,169, Cl. 92-206.000.
Environmental Protection Agency: *See*—
Williams, Ralph E.; Brown, Larry L.; Marchese, Robert P.; Russell, Philip A.; and Armstrong, James A., 4,226,115, Cl. 73-28.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Holdeman, Louis B.; Toots, Jaan; and Chang, Chu-Cheng. Microwave integrated circuit for Josephson voltage standards. 4,227,096, Cl. 307-233.00R.
Navy: *See*—
Baum, Kurt; and Berkowitz, Philip T., 4,226,777, Cl. 260-333.000.
Birx, Daniel L., 4,227,153, Cl. 328-59.000.
Cross, Leslie E.; Newnham, Robert E.; and Skinner, Doyle P., 4,227,111, Cl. 310-358.000.
Davey, John E.; and Christou, Aristos, 4,226,649, Cl. 148-175.000.
Friedman, Moshe; and Ury, Michael G., 4,227,170, Cl. 337-204.000.
Hansen, Peder M., 4,227,249, Cl. 375-34.000.
Keller, Teddy M.; and Griffith, James R., 4,226,801, Cl. 260-465.00F.
Ohr, Jack, 4,226,624, Cl. 106-14.050.
Peck, William P., 4,226,186, Cl. 102-38.0PP.
U.S. Environmental Protection Agency: *See*—
O'Neill, Eoin P.; and Keairns, Dale L., 4,226,839, Cl. 423-177.000.
U.S. Philips Corporation: *See*—
Blom, Hendrik, 4,227,216, Cl. 358-164.000.
Brandenburg, Klaus; Richter, Hermann; and Weber, Wendelin, 4,226,545, Cl. 400-124.000.
Elders, Marius J. A.; and Hopmans, Jan H. M., 4,227,143, Cl. 323-48.000.
Elshof, Leonardus A. M.; and Van Heek, Herman F., 4,227,115, Cl. 313-403.000.
Harupa, Gerhard, 4,226,227, Cl. 126-442.000.
Houkes, Henk, 4,227,099, Cl. 307-315.000.
Jacobs, Jacobus H., 4,226,509, Cl. 350-343.000.
Rosink, Wilhelmus B.; and Cox, Cornelus P. J., 4,227,139, Cl. 318-803.000.
United States Steel Corporation: *See*—
Kelly, Calvin E.; and Nicely, Thomas E., 4,226,679, Cl. 202-248.000.
United States Surgical Corporation: *See*—
Jarvik, Robert K., 4,226,242, Cl. 128-325.000.
United Technologies Corporation: *See*—
Cicon, Dennis E., 4,226,297, Cl. 181-213.000.
Cox, Arthur R.; Bourdeau, Romeo G.; and Holiday, Paul R., 4,226,644, Cl. 148-2.000.

Johnson, Leonard A., 4,226,085, Cl. 60-262.000.
Lewis, George D.; Russell, Paul L.; and Stettler, Jeffrey, 4,226,083, Cl. 60-39.060.
Norris, James R.; Miller, Guy W.; Jamison, John C.; and Ransom, Ralph D., 4,226,365, Cl. 239-66.000.
Spadaccini, Louis J., 4,226,087, Cl. 60-749.000.
University of Miami: *See*—
Espana, Guillermo A., 4,226,191, Cl. 108-20.000.
University Patents, Inc.: *See*—
Cole, Jack R., 4,226,856, Cl. 424-177.000.
Zeitlin, Harry; and Fernando, Quintus, 4,226,836, Cl. 423-41.000.
UOP Inc.: *See*—
Flagg, John F.; and Antos, George J., 4,227,026, Cl. 585-434.000.
Michalko, Edward; and deRosset, Armand J., 4,226,639, Cl. 127-46.00A.
Neuzil, Richard W.; and Priegnitz, James W., 4,226,977, Cl. 536-1.000.
Upjohn Company, The: *See*—
Ayer, Donald E., 4,226,984, Cl. 542-426.000.
Hester, Jackson B., Jr., 4,226,772, Cl. 260-245.500.
Smith, Curtis P.; and Temme, George H., 4,226,958, Cl. 525-356.000.
Walker, Jerry A., 4,226,790, Cl. 260-429.00R.
Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., 4,226,936, Cl. 435-55.000.
Uram, Robert; and Tanco, Juan J., to Westinghouse Electric Corp. Systems and method for organizing computer programs for operating a steam turbine with digital computer control. 4,227,093, Cl. 290-40.00R.
Ury, Michael G.: *See*—
Friedman, Moshe; and Ury, Michael G., 4,227,170, Cl. 337-204.000.
Utesch, Alfred L. Single conduit air conditioning system. 4,226,364, Cl. 237-63.000.
Utsumi, Kazuo: *See*—
Yukuta, Toshio; Fukuda, Hiroya; Ishii, Seiji; and Utsumi, Kazuo, 4,226,947, Cl. 521-107.000.
Vahlensieck, Hans-Joachim: *See*—
Kotzsch, Hans-Joachim; Seiler, Claus-Dietrich; and Vahlensieck, Hans-Joachim, 4,226,793, Cl. 556-470.000.
Valchev, Alexander: *See*—
Genev, Ivan V.; Konstantinov, Mihail; Valchev, Alexander; and Peev, Vassil, 4,226,207, Cl. 118-620.000.
Valois, Rene J.: *See*—
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Valve Concepts International: *See*—
Muchow, John D., 4,226,263, Cl. 137-614.170.
Vamos, Gyorgy: *See*—
Kapolyi, Laszlo; Szentgyorgyi, Geza; Vamos, Gyorgy; Grzymek, Jerzy; Grzymek, Anna D.; Bethke, Stanislaw; and Werynski, Bronislaw, 4,226,632, Cl. 106-100.000.
Van Alsten, Roy L.: *See*—
Terner, Leslie L.; Moskowitz, David; and Van Alsten, Roy L., 4,226,914, Cl. 428-446.000.
Van Beeck, Walter P., to AGFA-GEVAERT N.V. Device for detecting irregularities in a moving sheet material. 4,226,538, Cl. 356-430.000.
Vandas, Edward B., to McGraw-Edison Company. Conveyor lubricating and washing apparatus. 4,226,325, Cl. 198-493.000.
Vanderwal, Frank E., Jr., to Sunnen Products Company. Guide means for honing and like machines. 4,226,400, Cl. 248-646.000.
Vandiver, John K.; and Mitome, Shuhei, to Massachusetts Institute of Technology. Method and apparatus for absorbing dynamic forces on structures. 4,226,554, Cl. 405-195.000.
Vandling, John M., to Exxon Research & Engineering Co. Method and apparatus for generating a digital facsimile signal. 4,227,218, Cl. 358-282.000.
Van Don, Frank, to Airco, Inc. Flameless vaporizer. 4,226,605, Cl. 62-52.000.
Van Eenam, Donald N., to Monsanto Company. Wet strength paper additives. 4,226,957, Cl. 525-336.000.
Van Etten, Paul: *See*—
McNamara, John V.; and Van Etten, Paul, 4,227,187, Cl. 340-347.00P.
Van Heek, Herman F.: *See*—
Elshof, Leonardus A. M.; and Van Heek, Herman F., 4,227,115, Cl. 313-403.000.
Van Orsdale, Laurence S., Jr., to D. W. Zimmerman Mfg., Inc. Apparatus for handling bobbins. 4,226,567, Cl. 414-555.000.
van Rijswijck, Bernard P. J. M. Earth ground assembly including an electrode and rod means which may be driven into the ground. 4,227,034, Cl. 174-7.000.
Varian Associates, Inc.: *See*—
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Varigas, Francois N. E.: *See*—
Bancel, Guy H.; and Varigas, Francois N. E., 4,226,298, Cl. 181-226.000.
Varlamov, Gennady D.; Bekbulatov, Ildgam A.; Madaliev, Shavkat; Mamatov, Juldash; Proshkina, Alexandra V.; and Ubiennykh, Svetlana N. Method of producing furan-epoxy powder-like binder. 4,226,968, Cl. 528-91.000.
Vaseen, Vesper A. Method and apparatus for hydrogen production in an absorber liquid by electrochemical of coal and water. 4,226,683, Cl. 204-101.000.
Vassiliou, Eustathios, to Du Pont de Nemours, E. I., and Company. Process of coating a ferrous metal substrate with an aqueous fluoropolymer coating. 4,226,646, Cl. 148-6.14R.
Vaughan, Warren T., III; and MacDonnell, Gordon. Multi-parameter measurement system for fluids. 4,227,246, Cl. 364-571.000.
Vaughn, Howard A., Jr.: *See*—
Cooper, Glenn D.; Haaf, William R.; and Vaughn, Howard A., Jr., 4,226,761, Cl. 260-42.180.
VDO Adolf Schindling AG: *See*—
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Veaute, Georges, to Manufacture de Produits Chimiques Protex S.A. Sizing composition with cationic and anionic component. 4,226,749, Cl. 260-17.300.
Velsicol Chemical Corporation: *See*—
Albright, James A.; and Kmiec, Chester J., 4,226,813, Cl. 260-927.00R.
Sienkowski, Kenneth J.; Nicholson, Richard R.; and Smith, Ray E., 4,226,907, Cl. 428-288.000.
Stach, Leonard J., 4,226,859, Cl. 424-200.000.
Venturello, Carlo; and D'Aloisio, Rino, to Montedison S.p.A. Process for the manufacture of alkylene carbonates. 4,226,778, Cl. 260-340.200.
Vera, Paul J. Electrolysis foil. 4,226,696, Cl. 204-290.00R.
Verbeek, Willem J. P. A.: *See*—
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Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH: *See*—
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DeHaan, John M., 4,226,033, Cl. 37-2.00R.
Vertesy, Laszlo: *See*—
Oeding, Volker; Pfaff, Werner; Vertesy, Laszlo; and Weidenmuller, Hans-Ludwig, 4,226,764, Cl. 260-112.00R.
Vesper, James E. Humidifier. 4,226,174, Cl. 98-109.000.
Vesperman, William C.: *See*—
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Victor Company of Japan, Ltd.: *See*—
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Vilardi, Frank, to Savant Instruments, Inc. Vacuum centrifuge with magnetic drive. 4,226,669, Cl. 159-6.00R.
Villette, Guy J. Magnetically driven pump. 4,226,574, Cl. 417-420.000.
Vinals, Joaquin F.: *See*—
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Vincent, Rod G. Furniture frame. 4,226,488, Cl. 312-257.00R.
Vlasov, Jury M.: *See*—
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Vogler, Kathleen R.: *See*—
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Voitko, Andrei M. Rapid-freezing apparatus for food products. 4,226,093, Cl. 62-381.000.
Vojvodich, Mario M.; and Theall, Charles E., Jr., to Singer Company, The. Electronic active star element for an optical data transmission system. 4,227,260, Cl. 455-601.000.
Voros, Istan: *See*—
Boros, Jozsef; Csillag, Zsolt; Ferenczi, Tibor; Kalman, Tibor; Lengyel, Laszlo; Matyasi, Jozsef; Orban, Ferenc; Solymar, Karoly; Toth, Bela; Toth, Lajos; Voros, Istan; Wentzely, Kalman; Zambo, Janos; and Zoldi, Jozsef, 4,226,838, Cl. 423-121.000.
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W. R. Grace & Co.: *See*—
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Waddill, Harold G.; and Klein, Howard P., to Texaco Development Corp. Phenol-aldehyde condensation product with aminoalkylene derivative of a polyoxyalkylenepolyamine. 4,226,971, Cl. 528-162.000.
Wadsworth, Walter J., to Fern Engineering. Appearance system. 4,226,068, Cl. 52-508.000.
Wafer, John A.: *See*—
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Wagenaar, Loren B.: *See*—
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Wagnon, Norman L.: *See*—
Hill, Benjamin J.; and Wagnon, Norman L., 4,226,434, Cl. 280-47.210.
Wahli, Marcel. Method and apparatus for the surface working and for reworking of workpieces. 4,226,111, Cl. 72-437.000.
Wahoski, Ernest C.: *See*—
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Waid, George M.; and Ault, Robert T., to Republic Steel Corp. Steel well casing and method of production. 4,226,645, Cl. 148-2.000.
Wakabayashi, Tsuneo: *See*—
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Walker, Jerry A., to Upjohn Company, The. Process for oxidizing thallium (I) to thallium (III). 4,226,790, Cl. 260-429.00R.
Walker, Loren H.: *See*—
Espelage, Paul M.; and Walker, Loren H., 4,227,138, Cl. 318-802.000.
Walker, William E., Jr. Surgical forceps. 4,226,240, Cl. 128-321.000.
Walker, William E., Jr. Surgical forceps. 4,226,241, Cl. 128-321.000.
Wall, Albert. Hairbrush construction. 4,226,251, Cl. 132-85.000.
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Walser, Armin, to Hoffmann-La Roche Inc. Process for the preparation of imidazobenzodiazepines. 4,226,768, Cl. 260-239.0DD.
Walser, Armin, to Hoffmann-La Roche Inc. 1,2,5-Oxadiazino[5,4-a][1,4]benzodiazepine derivatives. 4,226,771, Cl. 260-243.300.
Walsh, Peter, to Duro-Test Corporation. Incandescent electric lamp with partial light transmitting coating. 4,227,113, Cl. 313-112.000.
Walther & Cie Aktiengesellschaft: *See*—
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Washizu, Teruo; and Goto, Eizo, to Tokyo Shibaura Electric Co., Ltd. Glass compound layer for mechanical and thermal protection of a laminated iron core rotary electromachine. 4,227,108, Cl. 310-214.000.
Wasser, Norbert, to Walther & Cie Aktiengesellschaft. Funnel. 4,226,268, Cl. 141-331.000.
Watanabe, Koji, to Nifco Inc. Catching and holding the terminal end of a tape in a tape reel. 4,226,382, Cl. 242-74.000.
Watanabe, Masanori; Nonomura, Kinzo; and Takesako, Yoshinobu, to Matsuhita Electric Industrial Co., Ltd. Picture display device. 4,227,117, Cl. 315-13.00R.
Watanabe, Tadashi: *See*—
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Watanabe, Yasuo; Isoyama, Seizi; and Yamamichi, Yoshikazu, to Dowa Mining Co., Ltd. Process and apparatus for production of spherical grain ferrite powder. 4,226,843, Cl. 423-594.000.
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Watson, Charles R., Jr.; and Eichner, Mary A., to Allied Products Corporation. Epoxy composition for threadlocking. 4,226,969, Cl. 528-93.000.
Watson, Frederick D.: *See*—
Mayse, Weldon D.; and Watson, Frederick D., 4,226,689, Cl. 204-188.000.
Watson, Hugh R.; Rowsell, David G.; and Spring, David J., to Wilkinson Sword Limited. N-substituted paramenthane carboxamides. 4,226,988, Cl. 544-176.000.
Watson, John T., to Molins Limited. Continuous-rod making machines. 4,226,352, Cl. 225-100.000.
Waugh, John B. S., to Singer Company, The. Digital pressure sensor system with temperature compensation. 4,226,125, Cl. 73-708.000.
Waugh, John S.; and Braun, Martin, to Machlett Laboratories, Inc., The. Gradated target for X-ray tubes. 4,227,112, Cl. 313-41.000.
Webb, Derrel D.; and Anderson, Edwin A. Independent one-way acting hydraulic jar sections for a rotary drill string. 4,226,289, Cl. 175-297.000.
Webb, Robert E. Decorative device. 4,226,902, Cl. 428-7.000
Webb, Terence C.; and Reeves, David L. R., to Ciba-Geigy AG. Light sensitive photographic material containing development inhibitor releasing compounds. 4,226,934, Cl. 430-443.000.
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Wegner, Eugene H., to Phillips Petroleum Company. Treatment of make-up water for use in a fermentation process for growth of yeast cells requiring growth factors. 4,226,939, Cl. 435-247.000.
Wehrman, Floyd L. Key ring holder. 4,226,105, Cl. 70-456.00R.
Wei, Nan, to Monsanto Company. Foamable resins process. 4,226,942, Cl. 521-56.000.
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Wellett, Gabriel. Car door transfer seat for handicapped persons. 4,226,462, Cl. 296-68.000.
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Kapolyi, Laszlo; Szentgyorgyi, Geza; Vamos, Gyorgy; Grzymek, Jerzy; Grzymek, Anna D.; Bethke, Stanislaw; and Werynski, Bronislaw, 4,226,632, Cl. 106-100.000.
Westerberg, Gerhard; and Jacobsen, Hans, to Westerberg, Gerhard. Caliper. 4,226,024, Cl. 33-143.00L.
Western Electric Inc.: *See*—
Lueddecke, Donald E.; Mottine, John J., Jr.; and Vesperman, William C., 4,227,042, Cl. 174-120.0SR.
Westfall, Lee R.; and Fraser, Malcolm J., to Copperweld Corporation. Method and apparatus for cladding a metal rod with another metal. 4,227,061, Cl. 219-9.500.
Westinghouse Electric Corp.: *See*—
Binstock, Morton H.; Lehmer, Robert C.; Johnson, Steven J.; Topolosky, John J.; and Smith, Thomas E., 4,226,086, Cl. 60-656.000.
Douglas, George R.; and Thompson, John H., 4,227,110, Cl. 310-316.000.
Edblad, Warren A.; Gomola, John W.; Wallace, Frank E.; Wood, William G.; and Jones, F. David, 4,227,245, Cl. 364-468.000.
Johnston, Robert J.; Layciak, Stephen G.; and Colista, Dominic, 4,227,056, Cl. 200-44.000.
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Mulach, Arthur, 4,227,109, Cl. 310-258.000.
Runnels, Robert W.; and Wagenaar, Loren B., 4,227,035, Cl. 174-15.0BH.
Safiuddin, Mohammed; and Dickerson, Henry A., 4,227,130, Cl. 318-338.000.
Uram, Robert; and Tanco, Juan J., 4,227,093, Cl. 290-40.00R.
Woolfson, Martin G.; and Bentley, Floyd C., 4,227,212, Cl. 358-126.000.
Yamat, Miguel B.; Wafer, John A.; and Lang, Walter W., 4,227,161, Cl. 335-16.000.
Wheeler, Michael R. Surgical caliper. 4,226,025, Cl. 33-148.00E.

Whipps, George E.; and Bargeron, Richard J., to Whipps, Inc. Slide gates for water and sewage treatment plants. 4,226,553, Cl. 405-106.000.
Whipps, Inc.: *See—*
Whipps, George E.; and Bargeron, Richard J., 4,226,553, Cl. 405-106.000.
Whirlpool Corporation: *See—*
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Deming, Charles P.; Rybarczyk, Norbert J., Jr.; and Burkall, Alvin E., 4,226,026, Cl. 34-31.000.
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White, Dwain M., to General Electric Company. Block polymers of polyphenylene oxide and polystyrene. 4,226,951, Cl. 525-92.000.
White, Russell P., Jr., to McCain, Wesley G. Rotary filter. 4,226,716, Cl. 210-193.000.
Whitecotton, Graydon D.; and Whitecotton, Walley E. Method of making steel rule type piercing and blanking dies. 4,226,143, Cl. 76-107.00C.
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Widl, Gerhard, to VDO Adolf Schindling AG. System for indicating measured values. 4,227,150, Cl. 324-175.000.
Wigand, Gerhard. Device for the destruction of microfilm and similar data carriers. 4,226,372, Cl. 241-34.000.
Wilary, Frank J.: *See—*
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Wildonger, Richard A., to ICI Americas Inc. Synthesis of substituted 1-aralkyl-1H-v-triazoles. 4,227,004, Cl. 548-255.000.
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Willams, Robert M. Inert grinding and direct firing in coal burning systems. 4,226,371, Cl. 241-31.000.
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Williams, James E., to Wilson Research & Development, Inc. Feed tube protector for a food processor. 4,226,373, Cl. 241-37.500.
Williams, Ralph E.; Brown, Larry L.; Marchese, Robert P.; Russell, Philip A.; and Armstrong, James A., to United States of America, Environmental Protection Agency. Remote controlled air sampler. 4,226,115, Cl. 73-28.000.
Wilmotte, Stephan H.; Nautet, Jean A.; and Economopoulos, Marios, to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie. Apparatus for cooling metal products. 4,226,108, Cl. 72-201.000.
Wilson, Bernard T. Virtual sound source system. 4,227,050, Cl. 179-1.0GA.
Wilson, John E. Retractable propulsive means for small boats. 4,226,206, Cl. 440-112.000.
Wilson Jones Company: *See—*
Young, Raymond R., 4,226,039, Cl. 40-373.000.
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Wolcott, William G. Self-cleaning invertible gutter system. 4,226,057, Cl. 52-11.000.
Wolf, Wilhelm; and Puhl, Meinhard, to Bayer Aktiengesellschaft. Odorless benzoic acid process. 4,227,018, Cl. 562-494.000.
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Wright, Joseph H., to Polaroid Corporation. Film strip/audio tape arrangement for audio-visual cassette. 4,226,511, Cl. 352-72.000.
Wright, Nathaniel. Universal exercise apparatus for performing hamstring flex and other exercises. 4,226,415, Cl. 272-130.000.
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Wuerzer, Bruno: *See—*
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Wyss, Pierre-Charles: *See—*
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Xerox Corporation: *See—*
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Yamada, Hirotada; Nakagome, Takenari; and Komatsu, Toshiaki, to Sumitomo Chemical Company, Limited. 7-Methoxy cephalosporins. 4,226,863, Cl. 424-246.000.
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Yamagata, Totaro; and Banno, Shuji, to Shikibo Limited. Process for separating polyvinyl alcohol from its solution. 4,226,718, Cl. 210-219.000.

Yamagis, Kikuo; Okuyama, Hiroshi; and Kawaguchi, Hideo, to Fuji Photo Film Co., Ltd. Film embossing process. 4,226,825, Cl. 264-235.000.

Yamaguchi, Hiroyasu, to Tokyo Shibaura Denki Kabushiki Kaisha. Protective circuit for a power amplifier. 4,227,227, Cl. 361-86.000.

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Yamamoto, Hideaki; Matsumaru, Haruo; Matsui, Makoto; Tsukada, Toshihisa; Hirai, Tadaaki; and Maruyama, Eiichi, to Nippon Telegraph and Telephone Public Corporation; and Hitachi, Ltd. Photosensor. 4,227,078, Cl. 250-227.000.

Yamamoto, Hironori, to Canon Kabushiki Kaisha. Hydrostatic bearing component. 4,226,483, Cl. 308-9.000.

Yamamoto, Izuru; Takahashi, Yohji; and Kyomura, Nobuo. Carbamate derivatives and method for manufacture thereof. 4,226,883, Cl. 424-300.000.

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Yamamoto, Yasunobu; Matsuo, Mitsumasa; and Nakagawa, Atsushi, to Aisin Chemical Company, Limited. Method of manufacturing a clutch facing of the type used for automotive automatic transmissions. 4,226,816, Cl. 264-29.400.

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Yamat, Miguel B.; Wafer, John A.; and Lang, Walter W., to Westinghouse Electric Corp. Current limiting circuit breaker with pivoting contact arm. 4,227,161, Cl. 335-16.000.

Yamato, Motoyuki; and Natsuume, Tadao, to Nippon Zeon Co. Ltd. Process for isomerizing methyl-delta-4-tetrahydrophthalic anhydride. 4,226,779, Cl. 260-346.300.

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Yoshida, Masaru; Kumakura, Minoru; and Kaetsu, Isao, to Japan Atomic Energy Research Institute. Method for immobilizing enzymes. 4,226,938, Cl. 435-176.000.

Yoshiie, Shigeo: *See*—
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Yoshikawa, Shinsuke; Hisazumi, Nobuyuki; and Yamamoto, Masataka, to Kureha Kagaku Kogyo Kabushiki Kaisha. Biaxially stretched five-layer film and method for manufacture thereof. 4,226,822, Cl. 264-173.000.

Yoshino, Akira; Iwami, Isamu; and Wakabayashi, Tsuneo, to Asahi-Dow Limited. Water repellent inorganic foam and method for producing the same. 4,226,908, Cl. 428-310.000.

Yoshioka, Mitsuru: *See*—
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Young, Harold A. Apparatus for dispensing the contents of a tube having a movable platen. 4,226,336, Cl. 222-102.000.

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Young, Maurice A., to Dunlop Limited. Manufacture of tires. 4,226,654, Cl. 156-123.00R.

Young, Raymond R., to Wilson Jones Company. Multi-pocketed holder for film and card storage. 4,226,039, Cl. 40-373.000.

Yuhas, Edward R., to Dragoco, Inc. Cosmetic stick composition. 4,226,889, Cl. 424-59.000.

Yukumoto, Toshitaka: *See*—
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Yukuta, Toshio; Fukuda, Hiroya; Ishii, Seiji; and Utsumi, Kazuo, to Bridgestone Tire Company Limited. Flexible urethane foams having a low density and a method for producing said foams. 4,226,947, Cl. 521-107.000.

Yun, Han B.; and Whitton, Alfred J., to NL Industries, Inc. Synthetic polymer. 4,226,754, Cl. 260-29.6TA.

Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See*—
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Zambo, Janos: *See*—
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Zaugg, Ernst. Assembly transformable into furniture. 4,226,471, Cl. 297-118.000.

Zeibig, Anton, to Rosenthal Technik AG. Endo prothesis with a metal-ceramic union. 4,225,981, Cl. 3-1.913.

Zeinalov, Bagadur K.; Aliev, Vagab S.; Akhundov, Arif A.; Bocharov, Jury N.; Lugovskoi, Vladimir D.; and Miramanian, Akop A. Method of preparing naphthenic acids. 4,227,020, Cl. 562-511.000.

Zeitlin, Harry; and Fernando, Quintus, to University Patents, Inc. Method for separating molybdenum values from sea nodules. 4,226,836, Cl. 423-41.000.

Zelichenko, Faina S., administator: *See*—
Frolov, Jury F.; Piljukov, Jury F.; Cherednichenko, Vladimir S.; Orlov, Gennady I.; Kurapin, Igor N.; Shabalina, Roza I.; Lakernik, Mark M.; Gavrilenko, Alexandr F.; Yakovenko, Anatoly A.; Elkina, Alla K.; Golovachev, Anatoly I.; Egorova, Tatyana S.; Vlasov, Jury M.; Smelyansky, Matvei Y., deceased; and Zelichenko, Faina S., administator, 4,226,406, Cl. 266-148.000.

Zell, Michael N.: *See*—
Holecek, Joseph J.; Plummer, William B.; Schwieters, Clarence R.; and Zell, Michael N., 4,226,570, Cl. 414-751.000.

Zenith Radio Corporation: *See*—
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Zens, Rene J. L., to Breston, Michael P., a part interest. Universal long stroke pump system. 4,226,404, Cl. 254-359.000.

Zigman, Seymour; and Gilman, Paul B., Jr., to Eastman Kodak Company. Processes for inhibiting the growth of sea urchin eggs. 4,226,868, Cl. 424-258.000.

Zilahi-Szabo, Imre, to Magyar Vagon- es Gepgyar. Viscous shear dampers. 4,226,139, Cl. 74-574.000.

Zimmerman, Jessie G.; and Snider, Robert T., Sr. Fish scale remover. 4,226,004, Cl. 17-67.000.

Zimmermann, Peter: *See*—
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Zindler, Hugh A. Clutch and brake mechanism. 4,226,312, Cl. 192-14.000.

Zobel, Don W.: *See*—
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Zoecon Corporation: *See*—
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Henrick, Clive A., 4,226,872, Cl. 424-263.000.

Zoldi, Jozsef: *See*—
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Zollinger, Hans, to Ruti Machinery Works Ltd. Withdrawing carrier for looms with removal of the filling thread from stationary bobbins. 4,226,265, Cl. 139-448.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF OCTOBER, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Akwell Corporation, The: *See—*
Povlacs, Lawrence, Re. 30,410, Cl. 406-87.000.

Asahi Glass Company, Limited: *See—*
Nakaya, Keiichi; Hirata, Suekazu; and Sato, Kunio, Re. 30,411, Cl. 23-299.000.

Eastman Kodak Company: *See—*
Raychaudhuri, Pranab K., Re. 30,412, Cl. 136-255.000.

Eli Lilly and Company: *See—*
Holmes, Richard E., Re. 30,415, Cl. 424-250.000.

Fujii, Akio: *See—*
Umezawa, Hamao; Takahashi, Yasushi; Shirai, Tadashi; and Fujii, Akio, Re. 30,413, Cl. 260-112.50R.

Hirata, Suekazu: *See—*
Nakaya, Keiichi; Hirata, Suekazu; and Sato, Kunio, Re. 30,411, Cl. 23-299.000.

Holmes, Richard E., to Eli Lilly and Company. Substituted pyrroloquinoxalinones and diones. Re. 30,415, Cl. 424-250.000.

Kinoshita, Yoshiro, to Toray Industries, Inc. Process for producing a high tensile strength, high Young's modulus carbon fiber having excellent internal structure homogeneity. Re. 30,414, Cl. 423-447.600.

Nakaya, Keiichi; Hirata, Suekazu; and Sato, Kunio, to Asahi Glass Company, Limited. Process for purifying sodium hydroxide. Re. 30,411, Cl. 23-299.000.

Povlacs, Lawrence, to Akwell Corporation, The. Apparatus for loading prophylactic devices on test apparatus. Re. 30,410, Cl. 406-87.000.

Raychaudhuri, Pranab K., to Eastman Kodak Company. CdTe Barrier type photovoltaic cells with enhanced open-circuit voltage, and process of manufacture. Re. 30,412, Cl. 136-255.000.

Sato, Kunio: *See—*
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Sharp Kabushiki Kaisha: *See—*
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Umezawa, Hamao; Takahashi, Yasushi; Shirai, Tadashi; and Fujii, Akio, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Bleomycinic acid and process for preparing thereof. Re. 30,413, Cl. 260-112.50R.

Yasunaga, Tatsuhiro, to Sharp Kabushiki Kaisha. Automatic program locator for tape decks. Re. 30,416, Cl. 360-72.100.

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Famolare, Joseph P., Jr., to Famolare, Inc. Shoe sole. 257,186, 10-7-80, Cl. D2-322.000.

Filliben, Norbert V. Athletic team flag. 257,243, 10-7-80, Cl. D11-172.000.

Filliben, Norbert V. Athletic team flag. 257,244, 10-7-80, Cl. D11-172.000.

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Hoke, Kendall E. Magazine rack. 257,199, 10-7-80, Cl. D6-184.000.

Hoke, Kendall E. Wall clock. 257,232, 10-7-80, Cl. D10-6.000.

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Hunter, Donald R. Door wall greenhouse. 257,242, 10-7-80, Cl. D11-145.000.

Joachim, Charlotte D.; March, Alvin C.; and Ratliff, Kay S., to Procter & Gamble Company, The. Nonwoven sheet material or the like. 257,295, 10-7-80, Cl. D92-1.00P.

Johnson, Philmore E., to Superior Electric Company, The. Electrical test probe. 257,239, 10-7-80, Cl. D10-103.000.

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Kimball, Alvan C. Display container. 257,226, 10-7-80, Cl. D9-191.000.

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Kretz, Edward J., to Owens-Illinois, Inc. Combined decanter and stopper. 257,225, 10-7-80, Cl. D9-159.000.

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Leger, Jean. Bottle cap. 257,229, 10-7-80, Cl. D9-283.000.

Leonard, Henri, to Micro-Mega S.A. Dental handpiece. 257,284, 10-7-80, Cl. D24-12.000.

Lerner, Lawrence; and Schmitt, Fred, to Litton Business Systems, Inc. Desk or similar article. 257,196, 10-7-80, Cl. D6-161.000.

Link, Cabanne H. Watch case. 257,236, 10-7-80, Cl. D10-38.000.

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Lo f, Torbjorn; and Skarin, Lars, to Partex Fabriksaktiebolag. Tool for mounting marking sleeves onto wires, cables, or the like. 257,211, 10-7-80, Cl. D8-14.000.

Long, Edward L. Game board. 257,267, 10-7-80, Cl. D21-33.000.

Long, Edward L. Game board. 257,268, 10-7-80, Cl. D21-33.000.

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Sommerschild, Henrik W., to Aksjeselskapet Jotul. Stove. 257,278, 10-7-80, Cl. D23-97.000.
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Stoltenberg, Bernard; and Heck, Steven, to Luverne Truck Equipment, Inc. Running board for trucks. 257,250, 10-7-80, Cl. D12-203.000.
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Tisdale, Reynold D. Charcoal grill with kindling structure. 257,207, 10-7-80, Cl. D7-110.000.
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Turner, Robert G. Clock or like article. 257,233, 10-7-80, Cl. D10-6.000.
Union Fork & Hoe Company, The: *See—*
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United States Surgical Corporation: *See—*
Rawson, Paul O.; and Nagy, Louis E., 257,251, Cl. D13-05.000.
Rawson, Paul O.; and Nagy, Louis E., 257,285, Cl. D24-17.000.
Vickery, Dana L., to Simplex Time Recorder Co. Digital clock. 257,234, 10-7-80, Cl. D10-15.000.
Vincent, Michel. Table grill. 257,206, 10-7-80, Cl. D7-107.000.
von Roth, Fredrik G. R., II, to Acrylic Designs, Inc. Holder for food processor accessories. 257,194, 10-7-80, Cl. D6-130.000.
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Walbrun, Lawrence A.: *See—*
Gilling, Donald A.; and Walbrun, Lawrence A., 257,294, Cl. D59-2.00B.

Walz, David: *See*—
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Wegmann, Jerome B.; and Cook, Norbert F., to McNeil Corporation. Battery powered grease gun. 257,213, 10-7-80, Cl. D8-14.100.

Whitmoyer, Robert: *See*—
Ganter, Robert; Whitmoyer, Robert; and Rye, Palle, 257,281, Cl. D23-127.000.

Wilcox, Donald G., to Wilcox, Donald G.; and Show-Pak Inc. Molded plastic container. 257,191, 10-7-80, Cl. D3-73.000.

Winbauer, Robert A. Combined golf tee and ball marker holder. 257,189, 10-7-80, Cl. D2-400.000.

Withers, Joseph W.; and Elstner, Gustav, to Belwith International Ltd. Drawer knob or the like. 257,214, 10-7-80, Cl. D8-310.000.

Withers, Joseph W.; and Elstner, Gustav, to Belwith International Ltd. Drawer knob or the like. 257,215, 10-7-80, Cl. D8-310.000.

Withers, Joseph W.; and Elstner, Gustav, to Belwith International Ltd. Drawer knob or the like. 257,216, 10-7-80, Cl. D8-310.000.

Withers, Joseph W.; and Elstner, Gustav, to Belwith International Ltd. Drawer knob or the like. 257,217, 10-7-80, Cl. D8-310.000.

Woodard, James M. Moulding protector. 257,222, 10-7-80, Cl. D8-402.000.

Yamamura, Masamichi; Harada, Toshio; and Takahashi, Hanji, to Matsushita Electric Industrial Co., Ltd. Microwave oven. 257,208, 10-7-80, Cl. D7-128.000.

Yasui Sangyo Co., Ltd.: *See*—
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Youngberg, Phillip W. Compartmented package of tennis balls. 257,227, 10-7-80, Cl. D9-193.000.

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LIST OF PLANT PATENTEES

van Staaveren, M. C. Alstroemeria plant named Yellow King. 4,599, 10-7-80, Cl. 68.000.

van Staaveren, M. C. Alstroemeria named Pink Triumph. 4,600, 10-7-80, Cl. 68.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 7TH DAY OF OCTOBER, 1980

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Bevan, Ronald. Sack handling device. T999,001, 10-7-80, Cl. 414-82.000.

Buck, Dan F.: *See*—
Twiggs, Henry C.; Suggs, James L.; and Buck, Dan F., T999,002, Cl. 427-385.500.

Ford, John A.; and Lestina, Gregory J. Shifted photographic dyes and compositions, elements and processes employing them. T999,003, 10-7-80, Cl. 430-223.000.

Lestina, Gregory J.: *See*—
Ford, John A.; and Lestina, Gregory J., T999,003, Cl. 430-223.000.

Suggs, James L.: *See*—
Twiggs, Henry C.; Suggs, James L.; and Buck, Dan F., T999,002, Cl. 427-385.500.

Twiggs, Henry C.; Suggs, James L.; and Buck, Dan F. Application of polymeric powders to a substrate. T999,002, 10-7-80, Cl. 427-385.500.

CLASSIFICATION OF PATENTS

ISSUED OCTOBER 7, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

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49.3 4,226,734

63.2 4,226,735
135 4,226,736
182 4,226,737
188.3 CL 4,226,738
389 R 4,226,739
408 4,226,740
429 B 4,226,741
431 C 4,226,742
453 4,226,743
522 R 4,226,744
4,226,745

CLASS 254

2 B 4,226,401
30 4,226,402
273 4,226,403
335 4,226,405
359 4,226,404

CLASS 260

3.3 4,226,746
8 4,226,747
17 A 4,226,748
17.3 4,226,749
23 H 4,226,750
23.5 A 4,226,751
29.6 4,226,753
29.6 RB 4,226,752
29.6 TA 4,226,754
31.4 EP 4,226,755
33.2 R 4,226,756
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42.18 4,226,761
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112 R 4,226,764
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239 A 4,226,767
239 BD 4,226,766
239 DD 4,226,768
239.1 4,226,769
239.3 P 4,226,765
239.55 C 4,226,770
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315 4,226,774
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4,226,788
397.25 4,226,785
397.7 R 4,226,789
429 R 4,226,790
4,226,791
435 A 4,226,792
459 R 4,226,796
460 4,226,797
465 E 4,226,799
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465.3 4,226,798
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4,226,804
505 R 4,226,805
507 R 4,226,806
512 R 4,226,807
562 B 4,226,808
583 P 4,226,809
927 R 4,226,813

CLASS 261

39 B 4,226,814
110 4,226,815

CLASS 264

29.4 4,226,816
39 4,226,817
40.1 4,226,818
43 4,226,819
72 4,226,820
134 4,226,821
173 4,226,822
174 4,226,823
182 4,226,824
235 4,226,825
235.8 4,226,826
332 4,226,827
555 4,226,828

CLASS 266

148 4,226,406
226 4,226,407

CLASS 267

64 B 4,226,408

CLASS 269

41 4,226,409

CLASS 270

61 F 4,226,410

CLASS 272

55 4,226,411
68 4,226,412
70.4 4,226,413
117 4,226,414
130 4,226,415

CLASS 273

1.5 A 4,226,416
43 R 4,226,417
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260 4,226,419
269 4,226,420
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368 4,226,422
397 4,226,423

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9 B 4,226,424
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CLASS 277

37 4,226,426
80 4,226,427
94 4,226,428
96.2 4,226,429
139 4,226,430
165 4,226,431
212 F 4,226,432

CLASS 279

51 4,226,433

CLASS 280

47.21 4,226,434
283 4,226,435
404 4,226,436
405 R 4,226,437
477 4,226,438
628 4,226,439
660 4,226,440
718 4,226,441

CLASS 282

27.5 4,226,442

CLASS 283

2 4,226,443

CLASS 285

21 4,226,444
39 4,226,445
256 4,226,446
316 4,226,447
381 4,226,448
382.2 4,226,449

CLASS 290

1 C 4,227,092
40 R 4,227,093

CLASS 292

59 4,226,450
169.21 4,226,451
175 4,226,452
268 4,226,453
336.5 4,226,454
345 4,226,455

CLASS 294

1 B 4,226,456
15 4,226,457
88 4,226,458
99 R 4,226,459

CLASS 296

37.14 4,226,461
37.7 4,226,460
68 4,226,462
78.1 4,226,463
153 4,226,464
182 4,226,465
190 4,226,466

CLASS 297

5 4,226,467
84 4,226,468
85 4,226,469
108 4,226,470
118 4,226,471
270 4,226,472
316 4,226,473
484 4,226,474

CLASS 299

13 4,226,475
31 4,226,476
56 4,226,477

CLASS 301

37 SS 4,226,478
67 4,226,479

CLASS 303

24 C 4,226,480
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4,226,482

CLASS 307

113 4,227,094
229 4,227,095
233 R 4,227,096
279 4,227,097
311 4,227,098
315 4,227,099

CLASS 308

9 4,226,483
201 4,226,484
207 R 4,226,485

CLASS 310

13 4,227,100
49 R 4,227,101
52 4,227,102
71 4,227,103
75 R 4,227,104
153 4,227,105
184 4,227,106
198 4,227,107
214 4,227,108
258 4,227,109
316 4,227,110
358 4,227,111

CLASS 312

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42 4,226,487
257 R 4,226,488
296 4,226,489
331 4,226,490

CLASS 313

41 4,227,112
112 4,227,113
217 4,227,114
403 4,227,115
447 4,227,116

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367 4,227,121
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411 4,227,125

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325 4,227,128
331 4,227,129
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549 4,227,132
616 4,227,133
685 4,227,134
696 4,227,135
701 4,227,136
801 4,227,137
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803 4,227,139

CLASS 320

2 4,227,140
20 4,227,141

CLASS 322

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CLASS 323

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121 4,227,144

CLASS 324

51 4,227,145
4,227,146
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115 4,227,148
158 P 4,227,149
175 4,227,150
448 4,227,151

CLASS 328

59 4,227,153
141 4,227,154

CLASS 330

11 4,227,155
126 4,227,156
265 4,227,157

CLASS 331

2	4,227,158
94.5 P	4,227,159

CLASS 333

18	4,227,160

CLASS 335

16	4,227,161
202	4,227,162
205	4,227,163
230	4,227,164

CLASS 336

20	4,227,165
229	4,227,166

CLASS 337

161	4,227,167
	4,227,168
182	4,227,169
204	4,227,170

CLASS 338

33	4,227,171
123	4,227,172

CLASS 339

17 CF	4,226,492
17 LM	4,226,491
66 M	4,226,493
103 R	4,226,494
122 R	4,226,495
176 MP	4,226,496
184 M	4,226,497
205	4,226,498
258 R	4,226,499

CLASS 340

59	4,227,173
81 R	4,227,174
146.2	4,227,175
146.3 R	4,227,176
	4,227,177
147 LP	4,227,179
147 R	4,227,178
166 R	4,227,180
167 R	4,227,181
347 AD	4,227,183
347 CC	4,227,186
347 DD	4,227,184
347 NT	4,227,185
347 P	4,227,187
566	4,227,188
573	4,227,189
604	4,227,190
628	4,227,191
765	4,227,192
784	4,227,193
870.37	4,227,182

CLASS 343

5 CM	4,227,194
17.1 R	4,227,195
100 CL	4,227,196
878	4,227,197

CLASS 346

1.1	4,227,198
	4,227,199
75	4,227,200

CLASS 350

6.1	4,226,500
55	4,226,501
83	4,226,502
87	4,226,503
96.23	4,226,504
252	4,226,505
292	4,226,506
295	4,226,507
319	4,226,508
343	4,226,509

CLASS 352

31	4,226,510
72	4,226,511
115	4,226,512

CLASS 354

1	4,226,513
7	4,226,514
21	4,226,515
60 E	4,226,516
75	4,226,517
79	4,226,518
174	4,226,519
195	4,226,520
271	4,226,521

CLASS 355

1	4,226,522
	4,226,523
3 DD	4,226,524
14 D	4,226,525
53	4,226,526
71	4,226,527
74	4,226,528

CLASS 356

5	4,226,529
121	4,226,530
246	4,226,531
336	4,226,532
338	4,226,533
367	4,226,534
373	4,226,535
376	4,226,536
427	4,226,537
430	4,226,538
445	4,226,539
	4,226,540
446	4,226,541

CLASS 357

24	4,227,201
	4,227,202
59	4,227,203

CLASS 358

13	4,227,204
28	4,227,205
44	4,227,206
54	4,227,207
55	4,227,208
94	4,227,209
113	4,227,210
	4,227,211
126	4,227,212
128.5	4,227,213
148	4,227,214
160	4,227,215
164	4,227,216
192.1	4,227,217
282	4,227,218
289	4,227,219

CLASS 360

15	4,227,220
32	4,227,221
60	4,227,222
72.1	Re.30,416
73	4,227,223
96.5	4,227,224
128	4,227,225
137	4,227,226

CLASS 361

86	4,227,227
104	4,227,228
117	4,227,229
152	4,227,230
154	4,227,231
191	4,227,232
225	4,227,233
229	4,227,234
230	4,227,235
331	4,227,236
415	4,227,237
	4,227,238
422	4,227,239

CLASS 362

13	4,227,240
61	4,227,241
	4,227,242

CLASS 363

132	4,227,243

CLASS 364

200	4,227,244
468	4,227,245
571	4,227,246
900	4,227,247

CLASS 366

17	4,226,542
159	4,226,543

CLASS 368

66	4,226,081
285	4,226,082

CLASS 370

4	4,227,075
110	4,227,248

CLASS 375

2	4,227,253
13	4,227,152
34	4,227,249
37	4,227,250
110	4,227,251
113	4,227,252

CLASS 400

124	4,226,544
	4,226,545
144.2	4,226,546
613	4,226,547

CLASS 401

188 R	4,226,548

CLASS 403

92	4,226,549
157	4,226,550
219	4,226,551

CLASS 404

92	4,226,552

CLASS 405

106	4,226,553
195	4,226,554
224	4,226,555
263	4,226,556
269	4,226,557
302	4,226,558
303	4,226,559

CLASS 406

87	Re.30,410

CLASS 407

101	4,226,560

CLASS 409

232	4,226,561
233	4,226,562

CLASS 414

10	4,226,563
166	4,226,564
467	4,226,565
519	4,226,566
555	4,226,567
589	4,226,568
737	4,226,569
751	4,226,570

CLASS 417

63	4,226,571
269	4,226,572
329	4,226,573
420	4,226,574
423 A	4,226,575

CLASS 422

123	4,226,829
143	4,226,830
173	4,226,831
184	4,226,832
189	4,226,833
249	4,226,834
310	4,226,835

CLASS 423

41	4,226,836
118	4,226,837
121	4,226,838
177	4,226,839
300	4,226,840
345	4,226,841
447.6	Re.30,414
465	4,226,842
594	4,226,843
625	4,226,844
655	4,226,845

CLASS 424

1	4,226,846
12	4,226,847
19	4,226,848
	4,226,849
47	4,226,850
53	4,226,851
59	4,226,889
62	4,226,852
91	4,226,853
94	4,226,854
177	4,226,855
	4,226,856
	4,226,857
195	4,226,858
200	4,226,859
240	4,226,860
243	4,226,862
244	4,226,861
246	4,226,863
	4,226,867
248.5	4,226,864
	4,226,865
248.51	4,226,866
250	Re.30,415
258	4,226,868
	4,226,869
263	4,226,870
	4,226,871
	4,226,872
269	4,226,873
	4,226,874
272	4,226,875
273 P	4,226,773
	4,226,877
273 R	4,226,876
	4,226,878
278	4,226,879
283	4,226,880
285	4,226,881
	4,226,882
300	4,226,883
303	4,226,884
	4,226,885
356	4,226,887

CLASS 425

69	4,226,576
111	4,226,577
186	4,226,578
218	4,226,579
504	4,226,580

CLASS 426

36	4,226,888
92	4,226,890
430	4,226,891
538	4,226,892
564	4,226,893
606	4,226,894
658	4,226,895

CLASS 427

34	4,226,896
39	4,226,897
	4,226,898
101	4,226,899
228	4,226,900
385.5	4,226,901

CLASS 428

7	4,226,902
111	4,226,917
195	4,226,903
212	4,226,904
220	4,226,905
283	4,226,906
288	4,226,907
304	4,226,886
310	4,226,908
329	4,226,909
336	4,226,910
375	4,226,911
411	4,226,912
421	4,226,913
446	4,226,914
492	4,226,915
542	4,226,916
676	4,226,918

CLASS 429

25	4,226,919
94	4,226,920
104	4,226,921
	4,226,922
	4,226,923
126	4,226,924
161	4,226,925
252	4,226,926

CLASS 430

14	4,226,927
57	4,226,928
	4,226,929
126	4,226,930
302	4,226,931
312	4,226,932
320	4,226,933
443	4,226,934

CLASS 431

26	4,226,581
239	4,226,582
362	4,226,583

CLASS 432

77	4,226,584
106	4,226,585
	4,226,586
122	4,226,587
138	4,226,588

CLASS 433

5	4,226,589
28	4,226,590
133	4,226,591
197	4,226,592
217	4,226,593

CLASS 435

14	4,226,935
55	4,226,936
96	4,226,937
176	4,226,938
247	4,226,939
260	4,226,940
280	4,226,941

CLASS 440

112	4,226,206

CLASS 455

154	4,227,254
226	4,227,255
251	4,227,256
343	4,227,257
348	4,227,258
352	4,227,259
600	4,227,261
601	4,227,260

CLASS 474

42	4,226,133
82	4,226,130
	4,226,131
	4,226,132
181	4,226,134

CLASS 521

56	4,226,942
73	4,226,943
76	4,226,944
92	4,226,945
98	4,226,946
107	4,226,947
167	4,226,948
184	4,226,949

CLASS 525

67	4,226,950
92	4,226,951
192	4,226,952
193	4,226,953
259	4,226,954
316	4,226,955
330	4,226,956
336	4,226,957
356	4,226,958
401	4,226,959
	4,226,960
439	4,226,961
506	4,226,962

CLASS 526

114	4,226,963
	4,226,964
116	4,226,965
202	4,226,966

CLASS 528

74	4,226,967
91	4,226,968
93	4,226,969
128	4,226,970
162	4,226,971
168	4,226,972
481	4,226,973
483	4,226,974
	4,226,975
498	4,226,976

CLASS 536

1	4,226,977
4	4,226,978
17 R	4,226,979
	4,226,980
66	4,226,981
101	4,226,982
113	4,226,983

CLASS 542

426	4,226,984
	4,226,985

CLASS 544

16	4,226,986
64	4,226,987
176	4,226,988
198	4,226,989
212	4,226,990
221	4,226,991
234	4,226,992
237	4,226,993
251	4,226,994
321	4,227,000
334	4,226,995

CLASS 546

89	4,226,996
157	4,226,997
202	4,226,998
222	4,226,999
345	4,227,001

CLASS 548

216	4,227,002
	4,227,003
255	4,227,004
312	4,227,005

CLASS 556

443	4,226,794
470	4,226,793

CLASS 560

10	4,227,006
25	4,227,007
	4,227,008
61	4,227,009
77	4,227,010
121	4,227,011
131	4,227,012
190	4,227,013

CLASS 562

457	4,227,014
459	4,227,015
465	4,227,016
494	4,227,017
	4,227,018
503	4,227,019
511	4,227,020
513	4,227,021

CLASS 568

386	4,226,810
591	4,227,022
804	4,227,023
	4,227,024
937	4,226,811

CLASS 570

157	4,226,812

CLASS 585

259	4,227,025
434	4,227,026
465	4,227,027
941	4,227,028

CLASS 738

118.1	4,226,264

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	309	257,185		57	257,204	D9—	23	257,223		145	257,242		45	257,260
	322	257,186			257,205		26	257,224		172	257,243			257,261
	329	257,187		107	257,206		159	257,225			257,244	D19—	26	257,263
	378.2	257,188		110	257,207		191	257,226		181	257,245			257,264
	400	257,189		128	257,208		193	257,227	D12—	56	257,246		97	257,265
D3—	35	257,190		203	257,209		255	257,228		60	257,247			257,266
	73	257,191	D8—	10	257,210		283	257,229		70	257,248	D21—	01	257,276
D4—	25	257,192		14	257,211		285	257,230		125	257,249		33	257,267
D6—	125	257,193			257,212	D10—	2	257,231		203	257,250			257,268
	130	257,194		14.1	257,213		6	257,232	D13—	05	257,251		88	257,269
	134	257,195		310	257,214			257,233	D14—	6	257,252		108	257,270
	161	257,196			257,215		15	257,234		44	257,253			257,271
	172	257,197			257,216			257,235	D15—	56	257,254		143	257,272
	177	257,198			257,217		38	257,236		64	257,255		158	257,273
	184	257,199		336	257,218		68	257,237			257,256		160	257,274
	201	257,200		354	257,219		103	257,239		66	257,257		166	257,275
D7—	19	257,201		356	257,220		109	257,238		127	257,262		240	257,277
	43	257,202		380	257,221		114	257,240	D16—	04	257,258			

D23—	97	257,278												
		257,279												
		257,280												
	127	257,281												
	153	257,282												
		257,283												
D24—	12	257,284												
	17	257,285												
	53	257,286												
	58	257,287												
		257,288												
	99	257,289												
D27—	05	257,290												
D28—	19	257,291												
D30—	1	257,292												
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D59—	2 B	257,294												
D92—	1 P	257,295												

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DEFENSIVE PUBLICATIONS APPLICATIONS

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

4 :	4,226,856		4,226,288		4,227,153		4,226,624		4,226,717		4,226,013
6 :	4,225,995		4,226,294		4,227,155		4,226,644		4,226,770		4,226,402
	4,226,259		4,226,300		4,227,174		4,226,720		4,226,773		4,226,490
	4,226,409		4,226,323		4,227,194		4,226,740		4,226,806		4,226,829
	4,226,413		4,226,335		4,227,246		4,226,815		4,226,859		4,227,062
	4,226,475		4,226,359		4,227,256		4,226,817		4,226,877	22 :	4,225,988
	4,226,542		4,226,361	08 :	4,226,100		4,226,998		4,226,922		4,226,202
	4,226,548		4,226,368		4,226,115		4,227,136		4,226,937		4,226,367
	4,226,691		4,226,375		4,226,144		4,227,220		4,226,940		4,226,641
	4,226,699		4,226,392		4,226,187		4,227,258		4,226,977		4,226,742
	4,226,804		4,226,415		4,226,247	13 :	4,226,211		4,226,979		4,226,757
	4,226,921		4,226,416		4,226,350		4,226,255		4,227,026	23 :	4,226,363
	4,227,053		4,226,418		4,226,604		4,226,630		4,227,040		4,226,818
	4,227,079		4,226,431		4,226,659	15 :	4,226,031		4,227,045		4,226,854
	4,227,090		4,226,435		4,226,683		4,226,274		4,227,103		4,227,235
	4,227,131		4,226,440	09 :	4,226,057		4,226,419		4,227,114	24 :	4,225,993
	4,227,201		4,226,441		4,226,085		4,226,836		4,227,163		4,226,010
	4,227,249		4,226,448		4,226,087	16 :	4,225,978		4,227,169		4,226,017
8 :	4,225,983		4,226,449		4,226,148	17 :	4,225,977		4,227,189		4,226,028
	4,226,000		4,226,457		4,226,153		4,226,003		4,227,190		4,226,061
	4,226,167		4,226,459		4,226,365		4,226,007		4,227,239		4,226,094
9 :	4,226,152		4,226,478		4,226,373		4,226,032	18 :	Re.30,415		4,226,113
	4,226,297		4,226,484		4,226,488		4,226,034		4,226,004		4,226,174
	4,226,497		4,226,496		4,226,504		4,226,039		4,226,021		4,226,186
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	4,226,536		4,226,541		4,226,609		4,226,048		4,226,188		4,226,346
01 :	Re.30,410		4,226,579		4,226,794		4,226,054		4,226,318		4,226,698
	4,226,546		4,226,605		4,226,875		4,226,073		4,226,336		4,226,743
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	4,226,103		4,226,651		4,226,989		4,226,169		4,226,530		4,227,010
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	4,226,038		4,226,830		4,226,954		4,226,334		4,227,003		4,226,069
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	4,226,075		4,226,896	11 :	4,227,170		4,226,393		4,226,041		4,226,272
	4,226,098		4,226,899	12 :	4,226,062		4,226,396		4,226,206		4,226,422
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